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IOWA CONSERVATION COMMISSION DES MOINES
RECREATION USE PROJECTIONS AND NEEDS REPORT, (U)
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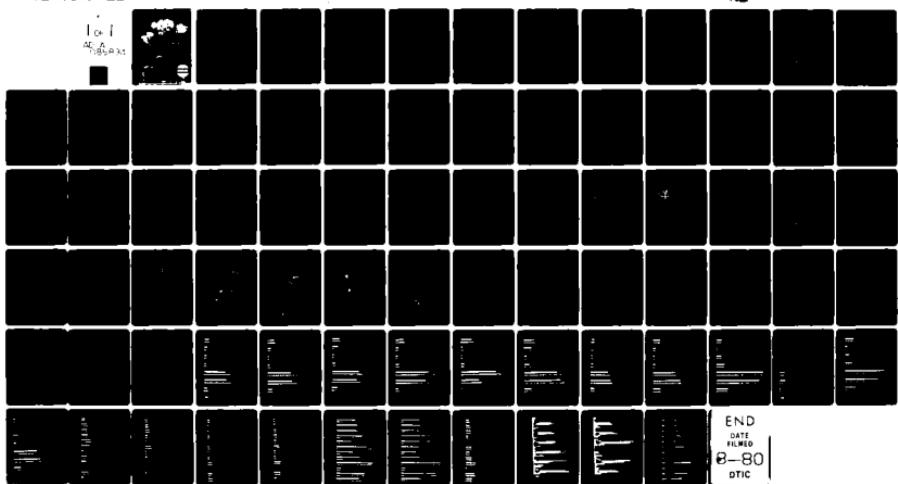
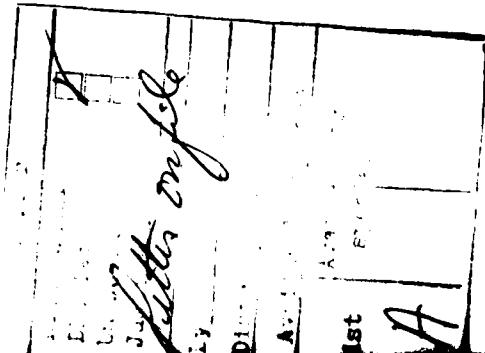


TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NUMBER</u>
Introduction	1
Background	1
Recreation Use Projections	2
Approach	2
Population Characteristics	8
Total Recreation Use	10
Total Use for Seven Selected Recreation Activities .	12
Recreation Lockage Projections	14
Recreation Needs	15
Findings	17
Needs Descriptions for Each Pool	18
Recommendations	33
Tables	
Table 1 - Percentage of Use by Travel Zone	3-4
Table 2 - Base Year Visitation	6
Table 3 - Activity Participation Percentages	7
Tables 4-13 - Relative Adequacy Indicators	46-55
Figures	
Figure 1 - Counties Decreasing in Population	9
Figures 2-23 - Recreation Use - Bar Graphs	55-77



INTRODUCTION

This report

The Recreation Use Projections and Needs Report is an assessment of present and projected recreation use in the Great River Environmental Action Team (GREAT II) area, Pools 11-22. The present and projected use was compared with existing recreation facility supply to rank the pools on the basis of supply and demand for facility development. This analysis, in conjunction with input from recreation resource managers and the public, can be utilized to develop site specific recommendations for resource management and facility needs.

BACKGROUND

Recreation resource managers and enforcement personnel have indicated a large increase of recreation use on and along the banks of the Mississippi River. They have also seen increased use of access and recreation facilities. The recreation user has noted this increase, also. The user has continually suggested to recreation resource managers and their agencies the need for new and/or improved public facilities.

The Recreation Work Group, GREAT II, (RWG II) saw a need to assess existing recreation use and project this use into the future to help determine the impacts of recreation trends on the existing supply of recreation facilities. Through this type of assessment, in addition to State Comprehensive Outdoor Recreation Plans (SCORP's), the work group would be in a better position to evaluate facility need recommendations suggested by the public and to guide recreation resource agencies in their future planning processes.

At this time, one note of caution must be added. The recreation use base data utilized are only an estimation of current use and may be subject to criticism. The analysis provides indications of recreation facility use at a pool level and may not be of value for site specific recommendations. However, some generalized site recommendations will be made based on the indications from this analysis and on resource manager's objectives for recreation use on specific pools and areas within pools.

RECREATION USE PROJECTIONS

Approach:

Calculation of the projected recreation use for the year 2025 involved several data sources. The Economics Branch of the Rock Island District, U.S. Army Corps of Engineers prepared population projections for three population zones (Zone 1, 0-25; Zone 2, 26-50; and Zone 3, 51-75 miles) for each of the 12 pools. Population projections beyond 75 miles (Zone 4) were developed by computing a compound rate of growth from the Upper Mississippi River Basin Commission's Main Stem "Series E" population figures.

The percentage breakdowns of recreation visitation from each zone to each pool were derived from data extracted from the "On-Site Questionnaire" collected by the RWG II in 1978. (See Table 1).

TABLE 1 Percentage of Use Within Each Travel Zone for Pools 11-22**FINAL TOTAL TALLY COUNT**

<u>Pool</u>	<u>Zone</u>	<u>% of Use</u>
11	1	73
	2	4
	3	7
	4	16
12	1	78
	2	6
	3	3
	4	13
13	1	40
	2	28
	3	10
	4	22
14	1	95
	2	1
	3	3
	4	1
15	1	91
	2	-
	3	5
	4	4
16	1	94
	2	1
	3	-
	4	5
17	1	85
	2	5
	3	5
	4	5
18	1	66
	2	25
	3	8
	4	1
19	1	92
	2	2
	3	1
	4	5

20	1	93
	2	4
	3	1
	4	2
21	1	98
	2	-
	3	1
	4	1
22	1	97
	2	2
	3	-
	4	1
TOTAL BREAKDOWN	1	82
	2	7
	3	4
	4	7

Because of limitations in time and personnel, RWG II was unable to generate its own current data for this report. Existing recreation use data was compiled from data collected by the Rock Island District, Corps of Engineers under the Recreation Resource Management System. The Rock Island District's Resource Management Branch felt that recent data was the most accurate for the projection study due to recent changes in monitoring methodology. The RWG II used an average of 1977 and 1978 pool visitation (see Table 2) and activity participation percentages (see Table 3) to develop "base year" figures.

These data were compared to existing studies such as the Pool 21 Study by Fleener completed in 1974 and through discussions with recreation and conservation area managers. Published and unpublished recreation user surveys and state creel census on Pools 16, 17, and 21 suggest that this data represents a consistent overestimate of the current use taking place on Pools 11-22. Although the data does appear high, it should be noted that it remains consistent throughout the report and can be used for comparisons between pools.

Due to the uncertainty of the impacts caused by the current energy situation on recreation use, leisure time, disposable income and mobility, the RWG II assumed that any increase or decrease in recreation use on the Mississippi River would derive from increases or decreases in population.

The percentages of recreation use from each zone were multiplied by the "base year" recreation use data to derive "base year" visitation from each zone for each pool. These products were then multiplied by the year 2000 and 2025 zonal population projection increases. The zonal population projection increases (in activity days¹) were added to the zonal base year recreation use figures to develop projected zonal recreation use for the years 2000 and 2025 for each pool. The zonal projections were added to derive projected use figures for each pool.

The pool recreation use information for the "base year", 2000 and 2025 were multiplied by the "base year" activity participation percentages to develop participation in activity days for the 7 selected recreation activities. The RWG II did not attempt to project changes in participation rates due to the quality and detail of information available.

¹Activity day --a visit to a recreation site by one person for any length of time during a 24-hour period.

TABLE 2 Base Year Visitation for Pools 11-22 Measured in Activity Days

Pool	'77	'78	Base Year Data ('77 & '78) Average
11	1,600,700	808,000	1,204,350
12	1,272,000	1,196,800	1,234,400
13	1,413,600	1,279,800	1,346,700
14	2,316,400	829,700	1,573,050
15	2,102,700	509,300	1,306,000
16	2,470,300	1,277,100	1,873,700
17	1,159,400	651,500	905,450
18	1,630,900	784,600	1,207,750
19	2,623,300	2,021,100	2,322,200
20	259,900	281,700	270,800
21	2,177,100	1,890,600	2,033,850
22	1,528,200	605,600	1,066,900

Definitions

An activity day is one visit to a recreation site by one person for any length of time during a 24-hour period.

The 1977 and 1978 recreation visitation data used in this table were generated by the Rock Island District's Recreation Resource Management System.

*Data should only be used for comparison purposes.

TABLE 3 Activity Participation Percentages¹ for Pools 11-22

(AVERAGE OF '77 and '78 RRMS DATA)

Pool	Picnicking	Camping	Swimming	Water-Skiing	Boating	Fishing	Hunting
11	6	4.5	3.5	2.5	28	29.5	5.5
12	8.5	5.5	2	3	29.5	31.5	6
13	7.5	6.5	1.5	4	31	28.5	6.5
14	8	3.5	2	4	32.5	30.5	3
15	13	2	1	4	40.5	21	0.5
16	8.5	6.5	2	5	27	30	5.5
17	5	3.5	2	3.5	30	34	8
18	9	4	3	3.5	28.5	35.5	9.5
19	4	0.5	3.5	5.5	31.5	29	8
20	6.5	4	1.5	3	29	34.5	6.5
21	7	2	3	6	31	26	8.5
22	3	1	5.5	3.5	24.5	27	7.5

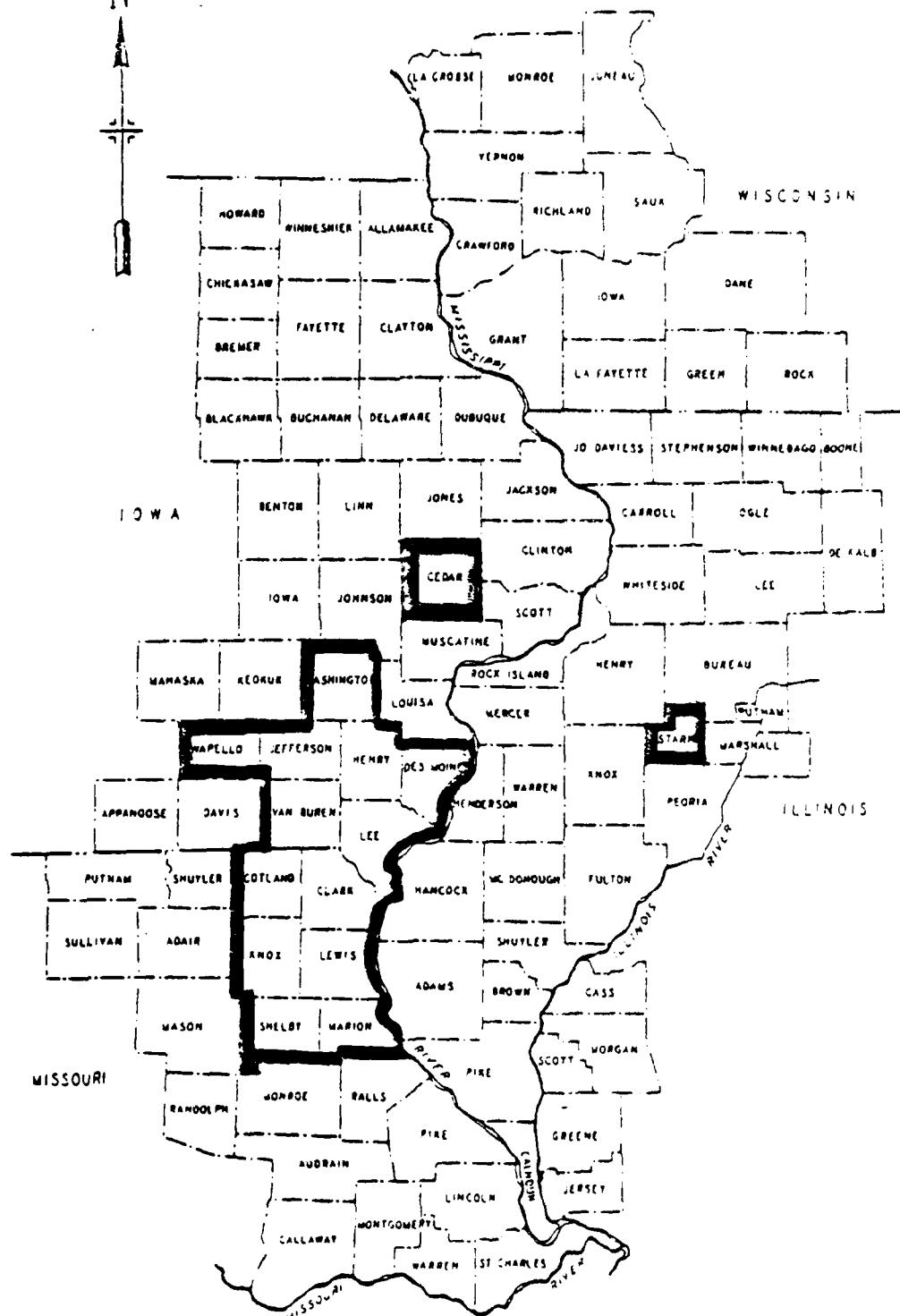
¹The percentages used in this table are an average of the 1977 and 1978 activity participation percentages taken from the Rock Island District's Recreation Resource Management System data.

Population Characteristics¹:

The overall population of the study area is expected to steadily increase through the year 2025. Fifty-one of the counties studied are expected to increase in population while 15 are expected to lose population. With the exception of Cedar County, Iowa, and Stark County, Illinois, those counties losing population comprise a contiguous region in southeast Iowa and northeast Missouri (Figure 1). The counties having the largest projected gain in population are Dane County, Wisconsin, and Winnebago County, Illinois. The population of each is expected to increase by more than 100,000 persons. Other counties with substantial expected increases of 20,000 persons or more are Grant and Green Counties in Wisconsin; Dubuque, Scott, and Johnson Counties in Iowa; and Whiteside, Rock Island, and McDonough Counties in Illinois. Adair County, Missouri, is expected to undergo the greatest increase with a net change of nearly 15,000 persons, or 61 percent.

The Quad Cities Area (Rock Island and Moline, Illinois; and Davenport and Bettendorf, Iowa) is expected to remain as the major metropolitan center in the study area and will probably show a substantial increase in population over the study period.

¹"Five-year population projections for the Mississippi River Region, 1975-2025 (Lock and Dam 22 through Lock and Dam 10), Rock Island District, U.S. Army Engineer District."



Counties Expected to Decrease in Population

Figure 1

Comparison of nationwide population projections with population projections within the study area (Pools 11-22) indicate that the study area will grow at a faster rate (27%) than the United States overall (18%). The study area's portion of the total United States' population is expected to increase from 1.3 percent to 1.4 percent. Although this percentage seems small, it amounts to .1 percent of approximately 250 million people in the United States, or about 250,000 people.

The basic composition of the total population studied is not expected to vary greatly. In each of the states, it is expected that future populations will have greater percentages of people age 15 years and above. The percentages of people age 1 year through 14 years are projected to decrease. The segment of population 15 years through 65 years are expected to provide the greatest recreation demand for water resources.

Income is another indicator of potential demand for recreation services and water resources. The per capita income for each of the four states is expected to increase sharply in the future. Except for Illinois, the growth rates for the states in the GREAT II area are expected to meet or exceed the average growth rate projected for the United States as a whole. As a result, the demand for increased recreational services is also expected to rise.

TOTAL RECREATION USE

Recreation use measured in activity days (A.D.) totaled 16.3 million for the base year in the GREAT II area. Recreation use is projected to increase 13 percent by the year 2000 for a total of 18.7 million A.D. Use is projected to

increase 21 percent by the year 2025 for a total of 20.7 million A.D. Use is anticipated to increase at a slower rate, 8 percent, between the years 2000 and 2025.

Base year recreation use figures revealed three areas of use that should be noted. They are: Pool 19, Quincy-Hannibal (Pools 21 and 22), and Quad Cities (Pools 14, 15, and 16). Pool 19 experienced the heaviest use, 2.3 million A.D., during the base year. Pool 21 followed with 2.0 million A.D. and Pool 16 was third with 1.9 million A.D. Pools 14 and 13 ranked fourth and fifth, respectively.

Projections to the year 2025 move Pool 16 into the first slot as the heaviest used pool with 2.4 million A.D. Pool 19 was second at just under 2.4 million A.D. and Pool 21 was third at 2.3 million A.D. Pool 14 again ranked fourth with Pool 11 taking over the fifth position just slightly ahead of Pool 13.

TOTAL RECREATION USE*

Pool	Base Rate	Year 2000	Year 2025
11	1,204,350	1,476,533	1,752,931
12	1,234,400	1,499,055	1,726,555
13	1,346,701	1,544,127	1,750,980
14	1,573,050	1,887,345	2,140,763
15	1,306,000	1,529,326	1,705,505
16	1,873,700	2,192,041	2,440,868
17	905,450	1,015,462	1,117,325
18	1,207,750	1,255,214	1,319,949
19	2,322,200	2,281,097	2,372,591
20	270,800	256,068	279,005
21	2,033,850	2,141,644	2,349,300
22	1,066,900	1,646,811	1,773,260
Total GREAT II	16,345,151	18,724,723	20,729,032

*Data should only be used for comparison purposes.

While the southern portion of the GREAT II area, Pools 19-22, was the most heavily used in the base year and is projected to remain heavily used through 2000 and 2025, the northern portion (Pools 11-16) is expected to experience the largest increases in use, both in percentage and in activity days.

Recreation use forecasts developed by the Midwest Research Institute in a report entitled, Methodology and Forecasts of Recreation Use and Small Craft Lockages on the Upper Mississippi River, for the St. Paul District, Corps of Engineers, supports these findings. The report concludes its discussion on recreation use forecasts by stating: "The one main similarity is that Zone 4, which includes the Quad Cities, appears to have the highest potential for growth along the Upper Mississippi River."

Total Use for Seven Selected Recreation Activities:

Picnicking, camping, swimming, water skiing, boating, fishing, and hunting are the seven recreation activities selected as indicators of use trends and facility needs. Boating and fishing are the most popular activities in the GREAT II area and account for over one half of the total base year use. This holds true for the 2000 and 2025 recreation use data.

The largest projected increases in activity days from the base year to year 2025 occurred in boating with 1.2 million A.D., and fishing with 1.1 million A.D. The largest percentage increase in use over the same period occurred in camping.

'77-'78 AVERAGE BASE RATES*

Pool	Picnic	Camping	Swimming	Water Skiing	Boating	Fishing	Hunting
11	72,261	54,196	42,152	30,109	337,218	355,283	66,237
12	104,924	67,892	24,688	37,032	364,148	388,836	74,064
13	101,003	87,536	20,201	53,868	417,477	383,810	87,536
14	125,844	55,057	31,461	62,922	511,241	479,780	47,192
15	169,780	26,120	13,060	52,240	528,930	274,260	6,530
16	159,265	121,791	37,474	93,685	505,899	562,110	103,054
17	45,273	31,691	18,109	31,691	271,635	307,853	72,436
18	108,698	48,310	36,233	42,271	344,209	428,751	114,736
19	92,888	11,611	81,277	127,721	731,493	673,438	185,776
20	17,602	10,832	4,062	8,124	78,532	93,426	17,602
21	142,370	40,677	70,155	122,031	630,494	528,801	172,877
22	47,007	15,669	86,180	54,842	383,891	423,063	117,518
TOTAL	1,186,915	571,377	465,052	716,536	5,105,167	4,899,411	1,065,558

*Data should only be used for comparison purposes.

PROJECTED ACTIVITY DAYS FOR 2000*

Pool	Picnic	Camping	Swimming	Water Skiing	Boating	Fishing	Hunting
11	88,592	66,444	51,679	36,913	413,429	435,577	81,209
12	127,420	82,448	29,981	44,972	442,221	472,202	89,943
13	115,810	100,368	23,162	61,765	478,679	440,076	100,368
14	150,988	66,057	37,747	75,494	613,387	575,640	56,620
15	198,812	30,586	15,293	61,173	619,377	321,158	7,647
16	186,324	142,483	43,841	109,602	591,851	657,612	120,562
17	50,773	35,541	20,309	35,541	304,639	345,257	81,237
18	112,969	50,209	37,656	43,933	357,736	445,601	119,245
19	91,244	11,405	79,838	125,460	718,546	661,518	182,488
20	16,644	10,243	3,841	7,682	74,260	88,344	16,644
21	149,915	42,833	64,249	128,499	663,910	566,827	182,040
22	49,404	16,468	90,575	57,638	403,469	444,639	123,511
TOTAL	1,338,895	655,085	498,171	788,672	5,681,504	5,444,451	1,161,514

*Data should only be used for comparison purposes.

PROJECTED ACTIVITY DAYS FOR 2025*

Pool	Picnic	Camping	Swimming	Water Skiing	Boating	Fishing	Hunting
11	105,176	78,882	61,352	43,823	490,821	517,115	96,411
12	146,757	94,960	34,531	51,797	509,334	543,865	103,593
13	131,323	113,814	26,265	76,039	542,804	499,029	113,814
14	171,261	74,927	42,815	85,630	695,748	652,933	64,223
15	221,716	34,110	17,055	68,220	690,729	358,156	8,527
16	207,474	158,656	48,817	122,043	659,034	732,260	134,248
17	55,866	39,106	22,346	39,106	335,197	379,890	89,386
18	118,795	52,798	39,598	46,198	376,185	468,582	125,395
19	94,904	11,863	83,041	130,492	747,366	688,051	189,807
20	18,135	11,160	4,185	8,370	80,911	96,257	18,135
21	164,451	46,986	70,479	140,958	728,283	610,818	199,690
22	53,198	17,733	97,529	62,064	434,449	478,780	132,994
TOTAL 1,489,056 734,995 548,013 970,360 6,290,861 6,025,736 1,276,223							

*Data should only be used for comparison purposes.

RECREATION LOCKAGE PROJECTIONS

Use projection information for pleasure boat lockages were developed by the Midwest Research Institute in their report, Methodology and Forecasts of Recreation Use and Small Craft Lockages on the Upper Mississippi River. The forecast model developed and analyzed population, boat registrations, market penetration rates, marina slippage, and recreation and commercial navigation lockages. The report states:

"With these limitations in mind, it appears that the greatest increases in lockage will occur near the Minneapolis/St. Paul area, the Quad Cities area, and near St. Louis. Some of the smaller metropolitan areas such as La Crosse, Wisconsin; Dubuque, Iowa; and Quincy, Illinois, etc., may also experience some increase. In general, the forecasting model supports the basic survey finding that implies that major conflict areas will probably be on weekend afternoons at locks near metropolitan areas."

RECREATION NEEDS

During preparation of the recreation needs analysis, the RWG II utilized the methodology outlined in Outdoor Recreation in Illinois, The Statewide Comprehensive Outdoor Recreation Plan, published in 1978 by the Illinois Department of Conservation.

Essentially, this approach is a means of ranking the pool facilities on bases of supply and demand for facilities development. Pools 11-22 were ranked according to their ability to provide recreation services based on the following formula:

Relative Adequacy Indicator (RAI) =

participation in activity days¹ per activity per pool
recreation supply per pool²

Use of this formula results in the average number of annual activity days of use received by each supply unit within each pool. For example, on Table 4, Picnicking, in Pool 11 in the base year, each supply unit (a picnic table) received an average of 243 activity days of use. Assuming that the number of picnic tables in Pool 11 remains the same through the year 2000, each table will receive 298 activity days of use during that year.

¹U. S. Army Corps of Engineers Recreation Resource Management System (RRMS) data were used to determine total participation per pool. These data were also used to determine percentage breakdowns of total use for each selected activity.

²The Upper Mississippi River Conservation Committee's 1977 GREAT II Recreation Facility Inventory; the nine-foot channel EIS; and the July 2, 1977, RWG II aerial photography were utilized to determine existing recreation supply.

Recreation use in activity days was compared for the base year, the year 2000, and the year 2025. In each case, existing facilities compiled from 1977 aerial photography or the 1977 GREAT II Recreation Facility Inventory were utilized for comparison. Adequate data and methodology on which recreation facility supply could be projected was not developed.

Once the relative adequacy indicators for all activities have been computed for each of the three study years, the pools are ranked in order of their relative need for more picnic tables. The pool with the lowest RAI value is assigned a ranking of "1", the greatest adequacy to meet the need in that year. The pool with the highest RAI value is given a "12" ranking because that pool has the smallest supply of tables relative to its picnicking demand. The pools with a high RAI ranking for a specific activity will therefore come closer to meeting that recreational demand than the pools with lower RAI rankings. As shown in Table 4, the order of the pool rankings may change over time due to different changes in population and participation in each pool. The base year computations should be an adequate indicator for short-term planning. The computations for 2000 and 2025 should provide information for mid- and long-term planning.

A number of important points must be made. Due to study constraints of time and funding, no attempt has been made to judge the quality of the facilities or services provided. It must be remembered that each pool has unique factors that affect the activities that take place in that pool.

Also, resource managers and planners who wish to use this data must understand that the data does not indicate the actual need for various facilities. Even

the pool with the lowest ranking for a particular activity may have a better supply of facilities relative to its demand, that pool may still have a serious shortage of those facilities. The other pools simply have a worse supply/demand ratio.

The purpose of the RAI technique is to identify the relative need for public recreation facilities in each pool and to help establish priorities for additional development to meet those needs. For example, if an agency has management responsibilities in a number of pools, this information can help in deciding which pool or pools should receive the highest development priorities. Once that decision is made, that agency must then decide where development should occur within a specific pool. Site-specific guidance is not provided through use of the relative adequacy indicators. Those final decisions must, and should, be made by the field managers and the user public who are most familiar with the on-the-ground situations. As additional factors are analyzed, resource managers and planners may suggest that recreation use should increase, remain at present levels, or decrease based on their knowledge of the resource and on the detailed management objectives for desired recreation use types, use levels, and use locations.

Findings:

The summary of Relative Adequacy Indicators (Tables 4-13) gives the numerical rankings for each of the seven activities analyzed. Overall indications point to those pools in the southern segment of the GREAT II area as experiencing the largest relative deficiency. One exception to this is Pool 20 because of its comparatively low recreation use figures. The analysis indicates Pool 22 is in the worst relative position overall followed by Pools 19, 17, 15, and 21.

The individual activity analysis provides a more in-depth assessment of relative need. The actual computation of the relative adequacy indicators points out the inequities of facilities from one shore of the river to the other but still does not assess the resource, the resource capacity for absorbing and maintaining recreation use, or the management objective for a given pool for a given activity. The individual activity analysis are outlined in Figures 2-22. The actual relative needs description on a pool by activity basis are as follows:

Needs Description For Each Pool:

Pool 11

The most northern pool in the GREAT II area is 32.1 miles long. It stretches from Guttenberg, Iowa, on the north to Dubuque, Iowa, on the south. There are a total of 15,000 acres of water in the pool, 275 miles of shoreline, including islands, and 7,163 acres of land in public ownership.

Picnicking ranks a distant third behind fishing and boating in activity use in Pool 11 at 72,000+ activity days. Pool 11 is relatively well supplied for picnicking but closer inspection of the data reveals that Iowa would better serve potential use with additional facilities.

Developed camping is relatively adequate in Pool 11 and should continue to provide relatively reasonable service in the future. Potential camp units are in the midpoint in comparing Pool 11 with other pools.

Swimming is an active use in Pool 11 ranking fourth among the 12 pools. The pool seems to be relatively well supplied in comparison to the other pools, but beaches with car/pedestrian access would be readily used.

Water skiing use in Pool 11 ranks relatively low in comparison to the other pools and is in the middle range of relative adequacy indicators. Several new hard-surfaced ramps are scheduled for construction in Guttenberg which should alleviate major facility needs.

Boating activity use will increase in importance in comparison to other pools. For the entire pool, parking spaces and ramps are relatively adequate, but Wisconsin displays a need for marina slippage. Future factors could also indicate a need for slippage in Guttenberg.

Fishing is the largest recreation use activity in Pool 11. Projections call for this use to increase dramatically in comparison to other pools. The adequacy indicators show no major need for additional facilities.

Hunting pressure is not heavy in comparison to the other pools. Ramp access is relatively adequate to accommodate this use.

Pool 12

Pool 12 is 26.3 miles long and goes from Dubuque, Iowa, on the north, to Bellevue, Iowa, on the south. There are 19,000 acres of water encompassed by 280 miles of shoreline (including islands). There are also 5,865 acres of public land in conjunction with the pool.

Picnicking on a pool-by-pool comparison is relatively well supplied. The analysis of the state unit breakdown indicates that Illinois could use additional facilities.

Developed camping is popular in Pool 12 and is in need of additional units. Future use projections indicates that this relative need increases in the future with no increase in present supplies. There is also a relative need for potential island beach areas for camping.

Swimming is not a relatively popular activity in Pool 12. The relative adequacy indicator analysis shows a moderate need for additional swimming beaches. Beach with car/pedestrian access would be utilized by the urban populations in the pool.

Water skiing is not a relatively popular pastime in comparison to the other pools in the GREAT II area. The analysis indicates a low need for additional hard-surfaced ramps.

Boating is popular in the pool. The indicator analysis shows a moderate need for additional ramps and a low need for parking spaces and marina slippage.

Fishing increases in relative popularity over the study period. The indicator analysis shows a moderate need for additional ramps with this need increasing by 2025. Hunting is moderately popular in Pool 12 and the relative adequacy analysis indicates a moderate need for additional ramps. The relative need increases in the year 2000 time frame.

Pool 13

Pool 13 stretches for 34.2 miles from Bellevue, Iowa, on the north, to Clinton, Iowa, on the south. There are 29,103 acres of water and 503 miles of shoreline (including islands). There are 25,160 acres of public land in the pool.

Picnicking is a moderately popular activity which increases in relative popularity over the study period. The adequacy analysis indicates that there is a relative low need for additional facilities.

Developed camping is a highly popular activity in comparison to the other pools. This is due to the large numbers of existing facilities to absorb this use. The adequacy analysis indicates a relatively low need for additional developed camping facilities. The analysis did point out a relatively high need for potential beach campsites.

Swimming use is relatively low in Pool 13 and the analysis indicates a low relative need for beach facilities. Additional beaches with car/pedestrian access would be highly beneficial.

Water skiing is a moderately popular activity with a moderately low relative need for additional hard-surfaced ramps. The breakdown of facilities by states indicates that Iowa could use additional facilities.

Boating is a moderately popular activity in comparing the 12 GREAT Pools. The adequacy analysis indicates a low need for additional parking spaces at ramps or additional ramps. The waterskiing analysis did indicate a need for hard-surfaced ramps on the Iowa shore. The analysis points out a moderately high need for additional marina slippage.

Fishing is moderately popular in Pool 13. The adequacy analysis shows a relatively low need for additional facilities.

Hunting is moderately popular with a low to moderate relative need for additional ramp facilities.

Pool 14

Pool 14 extends from Clinton, Iowa, on the north, to LeClaire, Iowa, on the south. This entails 29.2 miles of river; 10,450 acres of water and 277 miles of shoreline (including islands). There are 4,983 acres of public land in the pool.

Picnicking is a popular activity in Pool 14 and increases in relative popularity over the study period. The adequacy analysis indicates a moderate need for additional facilities. The facility breakdown by state identifies the major need lies in Illinois.

Camping is a moderately popular activity. The adequacy analysis indicates that there is a moderately low need for additional developed campsites; but this pool's close proximity to the major use generator, the Quad Cities, points toward the future need for additional upgraded facilities. There is also a relatively moderate need for potential beach campsite development.

Swimming is a moderately popular activity with a moderately low need for additional facilities. Again, in respect to the Quad Cities area, beaches with car/pedestrian access would be highly desirable.

Water skiing is a relatively popular activity in Pool 14. The adequacy analysis indicates a moderate need for additional hard-surfaced ramps.

Boating is a moderately popular activity which gains in relative popularity over the study period. The adequacy analysis points out a low need for additional ramps and marina slips. Analysis of state facility breakdowns indicates a need for additional slippage in Illinois. There is a moderate relative need for additional parking spaces.

Fishing is moderately popular and gains in relative popularity over the study period. The analysis shows a relatively low need for additional ramps.

Hunting is relative low in popularity and the adequacy analysis indicates a low need for additional ramps.

Pool 15

Pool 15 is the shortest of the 12 pools in the GREAT II area at 10.5 miles. It extends from LeClaire, Iowa, on the north to the Quad Cities on the south. There are 3,740 acres of water, 38 miles of shoreline (including islands) and 1,011.5 acres of public land in the pool. The Quad Cities metro area heavily influences the recreation use figures. Coupled with this heavy use potential is a shoreline with extensive commercial and industrial development. Due to these aspects, it is believed that moderate portions of use projected for Pool 15 will gravitate to Pools 14 and 16.

Picnicking is a relatively high use activity with a moderate need for additional facilities. Analysis of state facility breakdowns indicates Iowa needs additional picnic facilities.

Camping is a relatively low use activity with a moderate need for developed facilities. The state facility figures show that Iowa has the greater need. Pool 15 ranks lowest of the 12 pools for potential beach campsites. This problem is compounded by the rocky nature of most material dredged in this pool.

The adequacy indicator indicates a need for additional beaches. This especially applies for beaches with car/pedestrian access.

Waterskiing is moderately popular with a relatively high need for additional hard-surfaced ramps. The state facility figures show the need is most pressing on the Iowa shore.

Boating is a popular activity in the pool. The adequacy analysis indicates a relatively large need for additional ramps and parking spaces with Iowa showing the most severe need. There is a moderate need for additional marina slippage.

Fishing and hunting are relatively low use activities in comparison with the other pools. Again there is a high need for additional ramps, especially in Iowa. Also the more shoreline accessible to the bank fisherman, the more use the pool can absorb.

Pool 16

Pool 16 runs for 25.6 miles from the Quad Cities on the north, to Muscatine, Iowa, on the south. There are 12,047 acres of water with 231 miles of shoreline (including islands). 4,843 acres of publicly-owned are located in the pool.

Picnicking is a relatively popular activity in comparison to the other pools. The adequacy analysis points out a relatively well supplied situation, but state facility breakdowns indicate a need in Illinois.

Camping use in the GREAT II area is the greatest in Pool 16. There is a moderately high need for additional developed facilities. State facility data indicate a more pressing need in Illinois. The analysis indicates a high need for potential beach campsite development.

Swimming is a moderately popular activity with a high need for additional beaches. The provision of beaches with car/pedestrian access would be very beneficial.

Waterskiing is a popular activity in the pool. The analysis indicates a moderate need for additional hard-surfaced ramps.

Boating is a moderately popular activity among the 12 pools. The adequacy analysis indicates a moderate need for additional ramps, parking spaces, and marina slippage. State figure breakdowns indicate a more pressing need for parking spaces in Illinois and for more marina marina slippage in Iowa.

Fishing ranks relatively high in popularity which increases over the study period. The analysis indicates a moderate need for additional ramp facilities.

Hunting is moderately popular which increases to fairly high popularity by 2025. There is a moderate need for additional ramps to accommodate this relative use.

Pool 17

Pool 17 extends for 20.1 miles from Muscatine, Iowa, on the north, to several miles north of New Boston, Illinois. The pool contains 8,312 acres of water, 202.5 miles of shoreline (including islands), and 7,179 acres of public land.

Picnicking ranks low in popularity in comparison to the other pools. This may be due to the lack of opportunity with only 44 tables inventoried. The adequacy analysis points out a high need for additional facilities.

Camping is moderately low in popularity with a moderate need for additional developed camping facilities. Pool 17 shows a moderately high need for potential beach camping sites.

Swimming is not a relatively popular use activity. The analysis indicates a moderate need for additional beach frontage. This would best be served through car/pedestrian access facilities.

Water skiing is a relatively low use activity with a relatively moderate need for hard-surfaced ramps. State figures show that Illinois has the most pressing need.

There is a high need for additional ramps and marine slippage and a moderate need for parking space in Pool 17. Facility breakdowns indicate a more pressing need in Illinois for additional ramps and marina slips, while Iowa needs additional parking spaces.

Fishing ranks relatively low in popularity in the GREAT II area. Additional ramps are needed to ease the pressure on existing ramps, especially in Illinois.

Hunting is a moderately popular activity. The adequacy analysis indicates a severe need for additional ramps and state figures indicate that Illinois has the most pressing need.

Pool 18

Pool 18 stretches from north of New Boston, Illinois, to north of Burlington, Iowa, for a distance of 26.6 miles. The pool contains 13,600 acres of water, 279 miles of shoreline (including islands), and 9,953 acres of public land.

Picnicking in Pool 18 ranks moderately in relative use compared to the rest of the GREAT II area. This use declines in relative importance over the project period. The adequacy analysis indicates a moderate need for additional picnic facilities. The breakdown of facility by states shows that Iowa has a more pressing need for facilities than Illinois.

Camping is a relatively moderate use activity with a relatively low need for developed camping facilities. The pool is also fairly well situated for potential beach camping sites.

Swimming is a moderately important recreation activity in Pool 18. The analysis indicates the pool has a relatively low need for additional beach frontage although beaches with car/pedestrian access would be beneficial for the non-boater.

Water skiing is not a relatively popular activity. The adequacy analysis shows a low need for additional hard-surfaced ramps although the facility breakdown shows a deficiency in Iowa.

Boating is a relatively low use activity in comparison to the total GREAT II area. Additional ramps are needed in Iowa as well as parking spaces and marina slippage.

Fishing is a moderately popular activity, but is projected to decrease in relative importance over the study period. There is a moderate need for additional ramps which are more pressing in Iowa. This analysis also corresponds to hunting.

Pool 19

Pool 19 extends from north of Burlington, Iowa, on the north, to Keokuk, Iowa, on the south. The 46.0 miles of river is the longest pool in the GREAT II stretch. It also contains the largest water acreage at 30,854 acres with 246.3 miles of shoreline (including islands). In contrast to the longest length and largest acreage, there are only 2.88 acres of public land in the pool due to prior acquisition by Union Electric for the hydro-electric plant at Keokuk.

Picnicking is a relatively low use activity. This may be attributed to the low number of facilities in the pool. The adequacy analysis indicates a large need for additional facilities.

Camping is not popular in Pool 19. This can easily be attributed to the lack of any developed facilities in the pool. There is a severe need for additional

developed facilities in this pool. The pool overall is relatively well supplied with potential beach campsites, but this analysis does not hold true for the lower portion of the pool below Fort Madison, Iowa, where no island beaches exist.

Swimming is a popular activity, but the analysis indicates a severe need for additional beach frontage. This is readily apparent for the lower section of the pool and for car/pedestrian access beaches.

Water skiing is a popular activity in comparison to the other pools. The adequacy analysis shows the most severe relative need for additional hard-surfaced ramps in the GREAT II area.

Boating figures show the highest use in the GREAT II area occurs in Pool 19. The analysis indicates a moderate to high need for additional ramps, parking spaces, and marina slippage.

Fishing and hunting use in the pool ranks first among the 12 pools but then declines to the second position in 2025. The adequacy analysis points out a pressing need for additional access facilities.

Pool 20

From Keokuk, Iowa, on the north, to Canton, Missouri, on the south, Pool 20 stretches for 21.2 miles. The pool contains 7,542 acres of water, 93 miles of shoreline (including islands) and 178 acres of public ownership. The recreation use figures indicate that Pool 20 experiences the smallest amount of total activity use days in the GREAT II area.

Picnicking in the pool experiences the least relative use of the 12 pools. The adequacy analysis points out a high need for additional picnicking facilities.

Camping is not a popular activity with a moderate need for additional facilities. This may be derived from the fact that there are only 29 developed campsites in the pool and these are all in Missouri. The adequacy analysis shows a moderate need for additional developed campsites and the facility breakdown indicates a severe need in Illinois. The analysis also indicates a low need for additional potential beach sites.

Swimming in Pool 20 ranks the lowest of the 12 pools. The analysis shows little need for additional beach frontage, but additional car/pedestrian access beaches would provide opportunities to those without boats.

Waterskiing, boating, hunting, and fishing are not relatively popular. The adequacy analysis shows low relative needs for additional hard-surfaced or nonsurfaced ramps, parking spaces at ramps, and marina slippage. The state facility breakdown indicates that additional slippage could be utilized in Missouri and Illinois if there is a sufficient market.

Pool 21

Pool 21 runs from Canton, Missouri, on the north, to Quincy, Illinois, on the south. The pool is 18.4 miles long with 6,350 acres of water and 146.6 miles of shoreline (including islands). There are 8,536 acres of publicly-owned land in the pool.

Picnicking is a popular activity in Pool 21. The adequacy analysis indicates a moderate need for individual facilities. This need is the most severe on the Missouri shore.

Camping is a moderately popular activity but very few developed campsites are located here. The analysis shows a high need for additional facilities. The state facility breakdown shows this need to be more severe in Missouri. The analysis also indicates a moderate need for potential beach campsites.

Swimming ranks as a popular activity in the GREAT II area. The adequacy analysis indicates a moderately high need for additional beach frontage.

Waterskiing and boating are relatively high use activities in comparison of the 12 pools. There is a relatively high need for additional ramps. This need is most pressing in Missouri. There is also a moderately high need for additional parking spaces and marina slippage. Again, Missouri shows the largest deficiency of facilities.

Fishing and hunting are popular activities. The analysis indicates a moderately high need for additional ramp facilities. This need is the most severe in Missouri.

Pool 22

Pool 22 extends 23.6 miles from Quincy, Illinois, on the north, to Saverton, Missouri, on the south. The pool contains 8,540 acres of water, 126.0 miles of shoreline (including islands) and 6,592 acres of public land.

Picnicking in Pool 22 is a relatively low use activity in the GREAT II area. This is probably due to the lack of facilities. The adequacy analysis indicates the most severe need for additional picnicking facilities in the GREAT II area is in Pool 22.

Camping is also a low use activity in comparison to the other pools. Again, there are very few developed campsites for use. The analysis indicates a high need for additional developed campsites and a low need for potential beach campsites.

Swimming in the pool ranks highest among the 12 pools. The analysis indicates a high need for additional beach facilities. Facilities with car/pedestrian access would allow nonboaters increased access to the river.

Waterskiing is a moderately popular activity which decreases in relative importance over the study period. The adequacy analysis indicates a relatively high need for additional hard-surfaced ramps with the pressure on Missouri being most severe.

Boating is moderately popular in the pool and decreases in relative importance by 2025. The analysis points out a relatively high need for increased ramps, parking spaces, and marina slippage.

Fishing is moderately popular and hunting is quite popular in relativity to the other pools. Analysis of both activities indicate the most pressing need in the GREAT II area for additional ramps. The need is most pressing in Missouri.

RECOMMENDATIONS

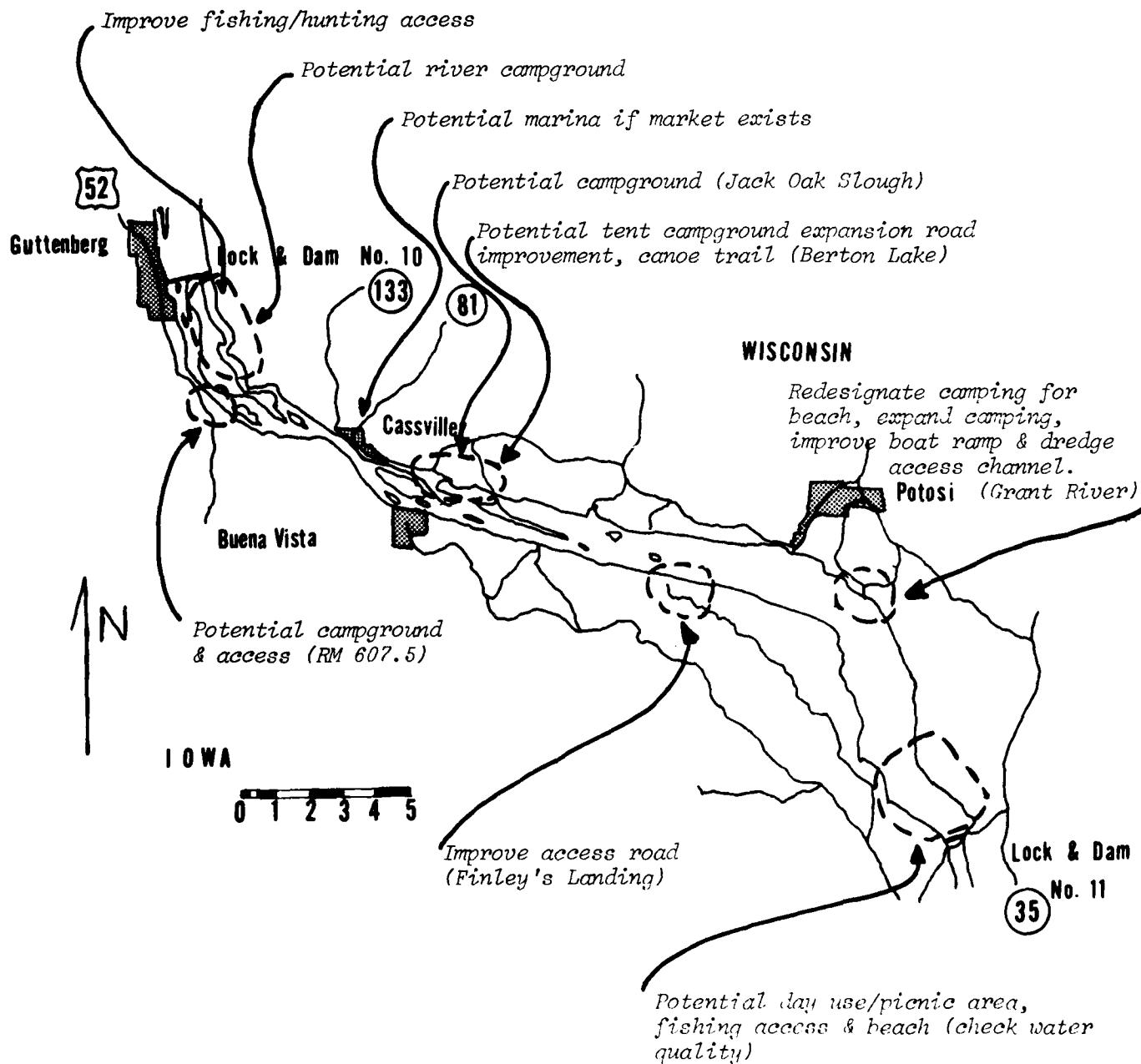
The following recommendations for recreation needs rely on the following sources of information in addition to the "Recreation Use Projections/Needs" conclusions:

1. Work group discussions including pool evaluations
2. Resource agency input and existing plans
3. Public input
4. The report of the 1978 summer recreation survey crew
5. Aerial infrared photography, July 2, 1977
6. The Corps' Master Plan for Resource Management, Pools 11-12
7. The Corps' inventory of leased sites

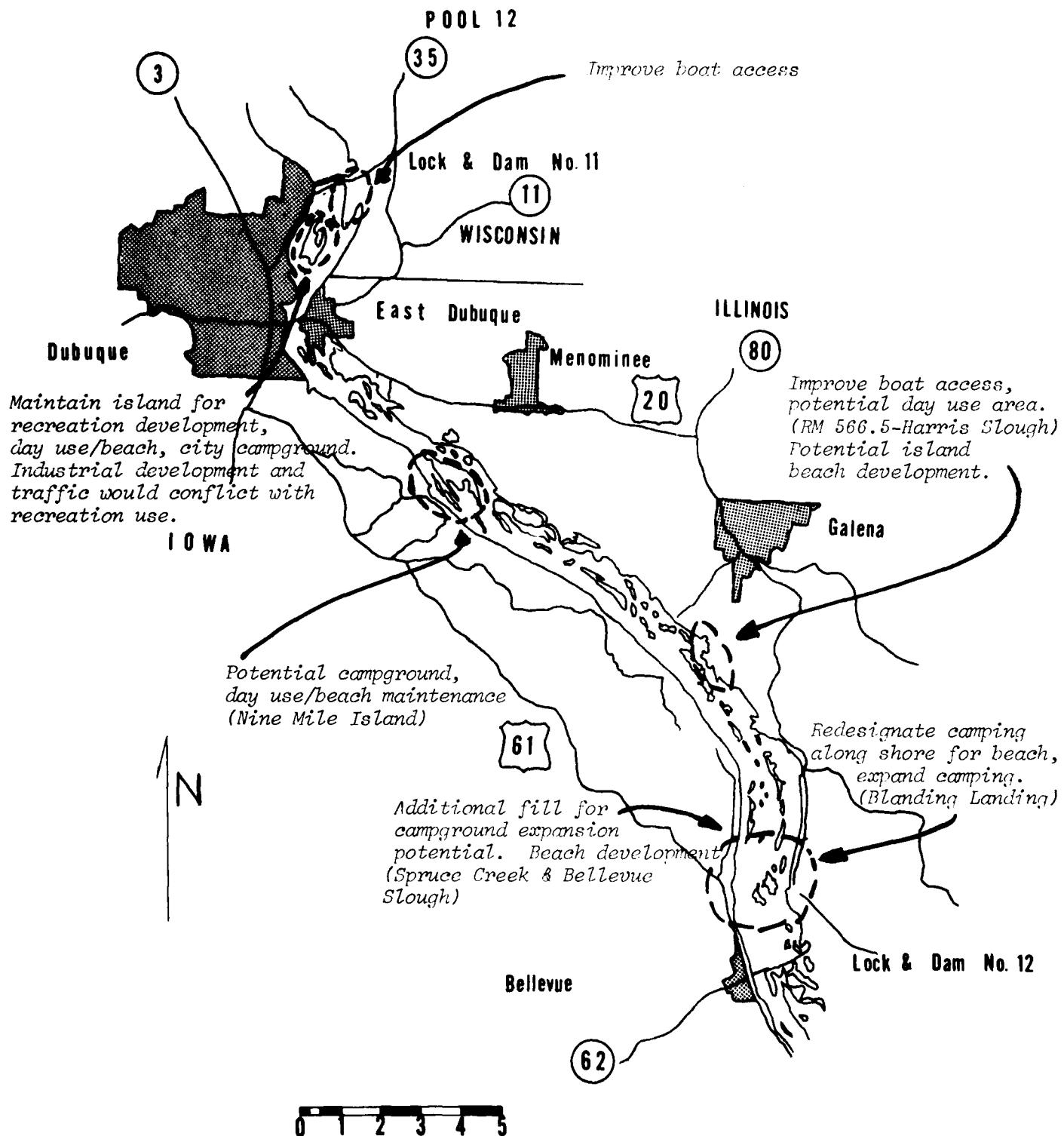
The RWG II reviewed the conclusions from the Needs Description in relation to resource and site potential for facility development and identified potential development alternatives on a pool by pool basis. It should be stressed that the following illustrations are generalized recommendations only. With some exceptions, these recommendations identify a need within a general area, but do not recommend specific sites for development.

GENERAL RECREATIONAL NEEDS AND POTENTIALS

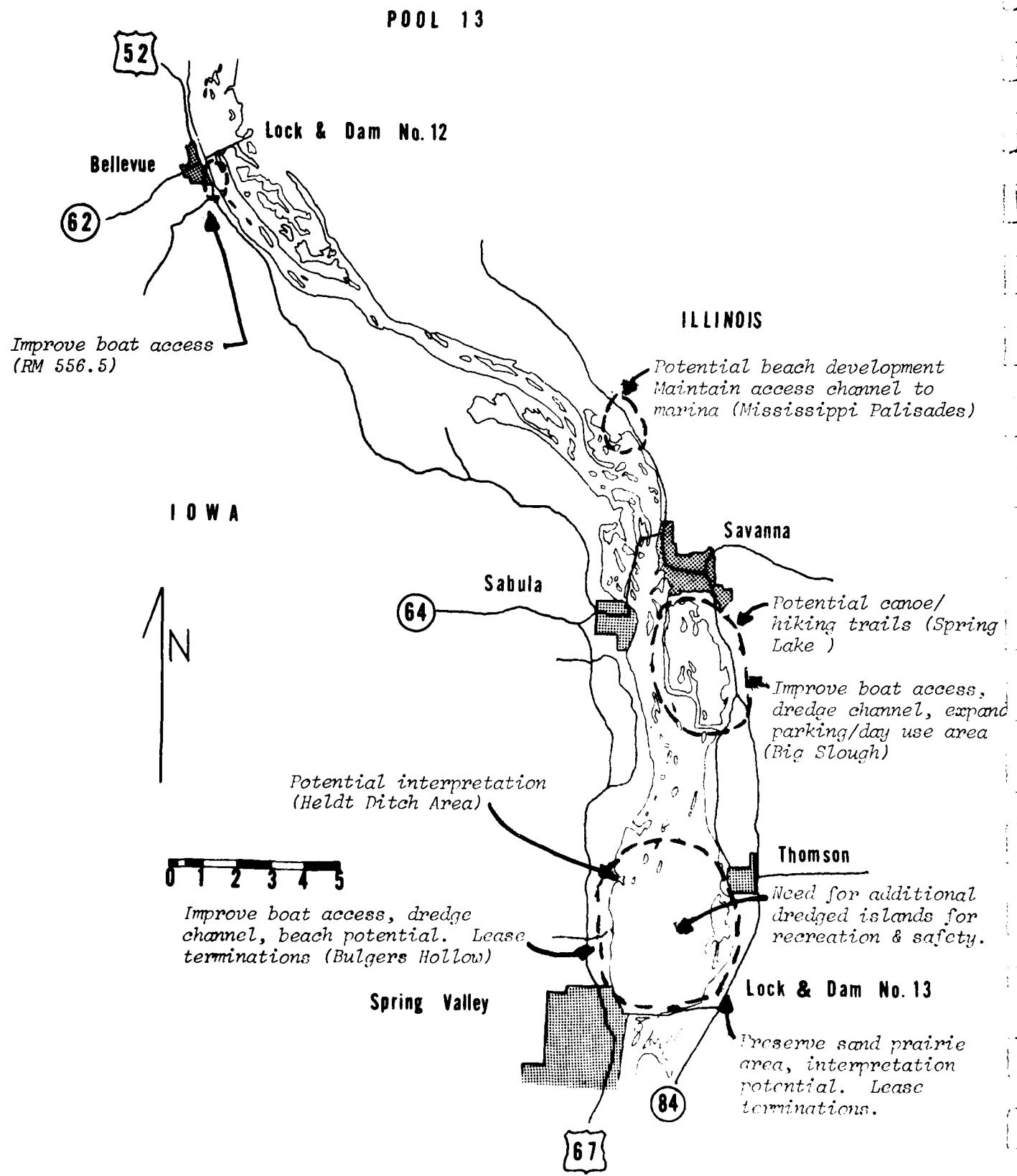
POOL 11



GENERAL RECREATIONAL NEEDS AND POTENTIALS

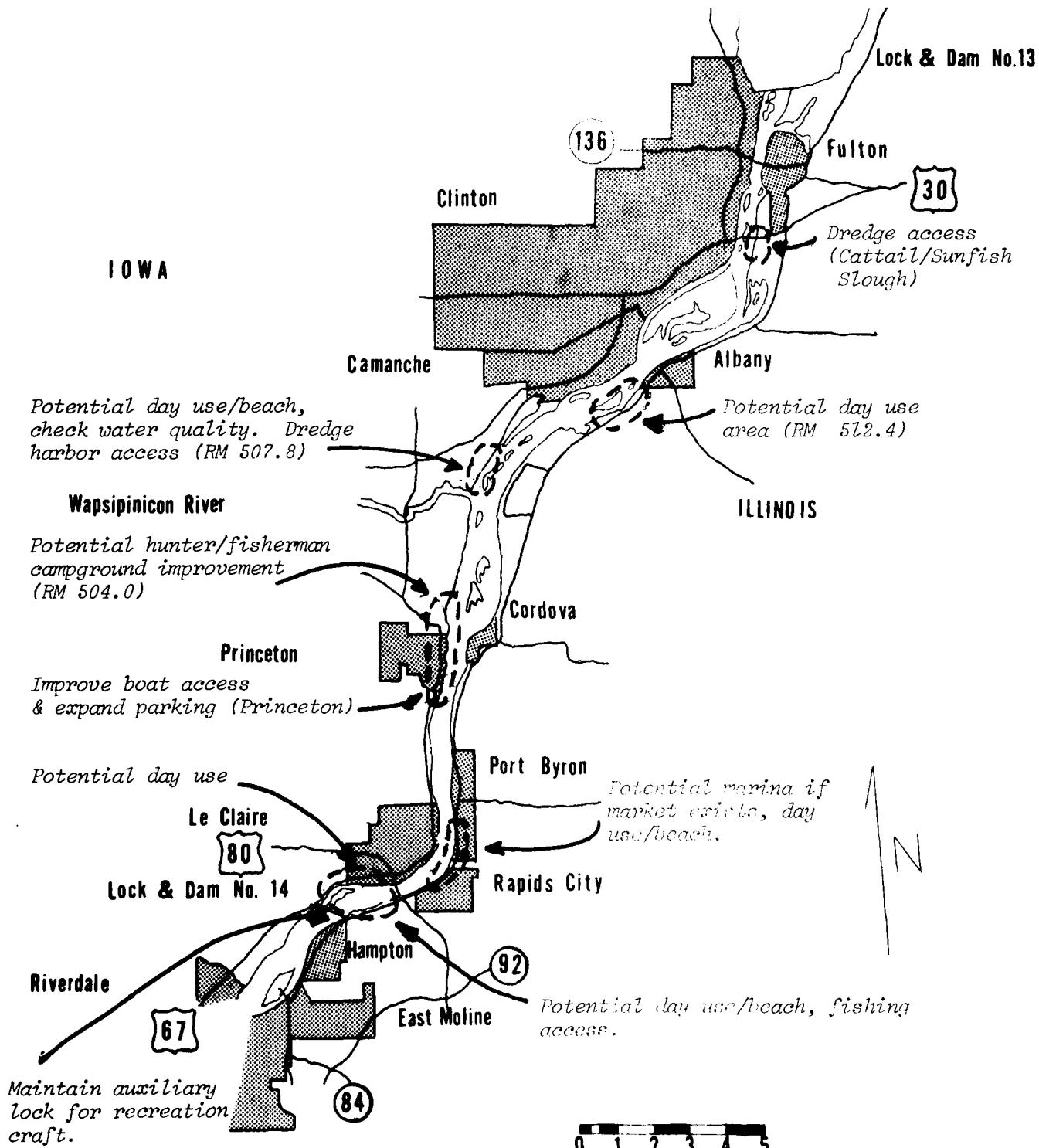


GENERAL RECREATIONAL NEEDS AND POTENTIALS



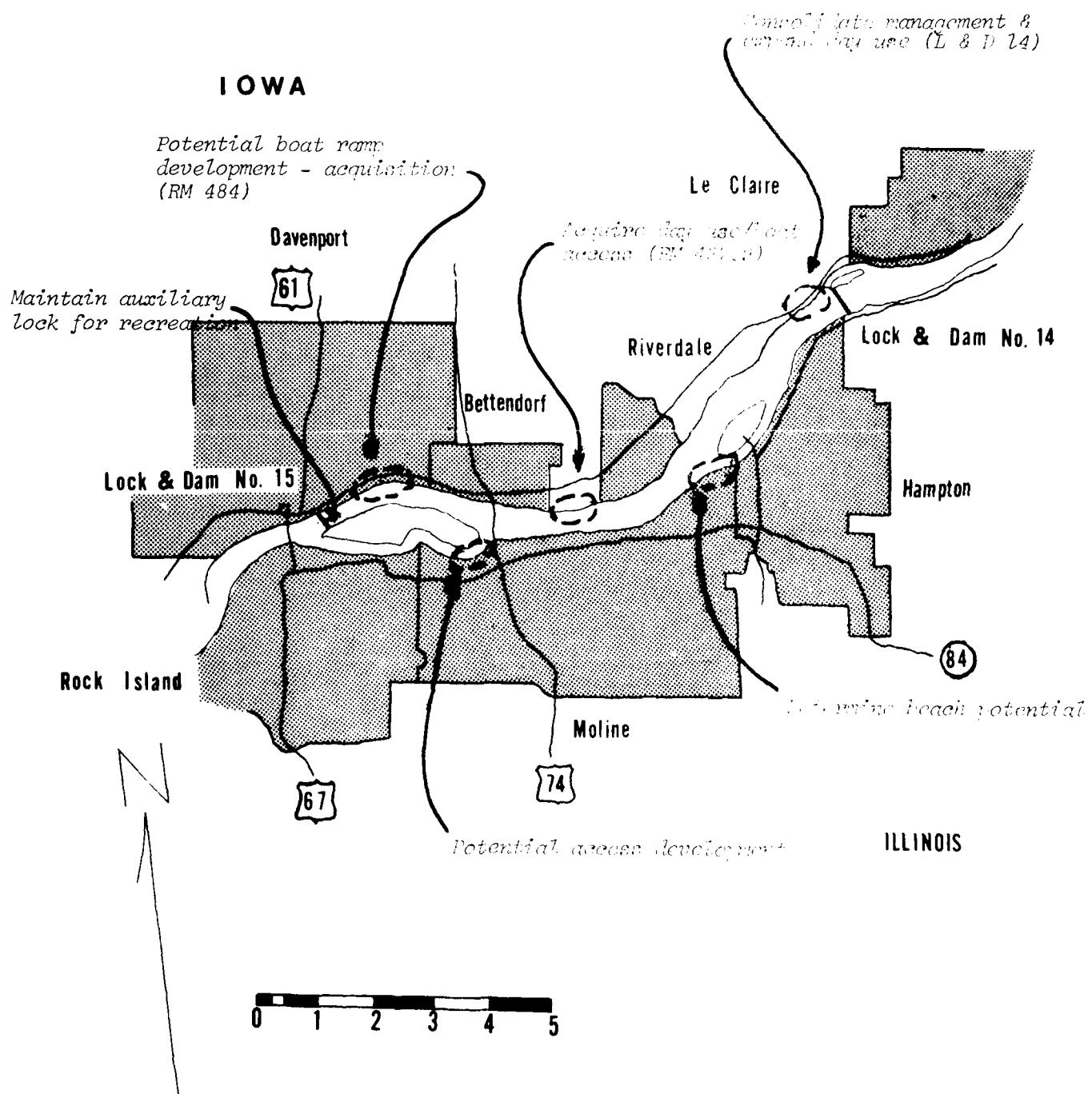
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 14



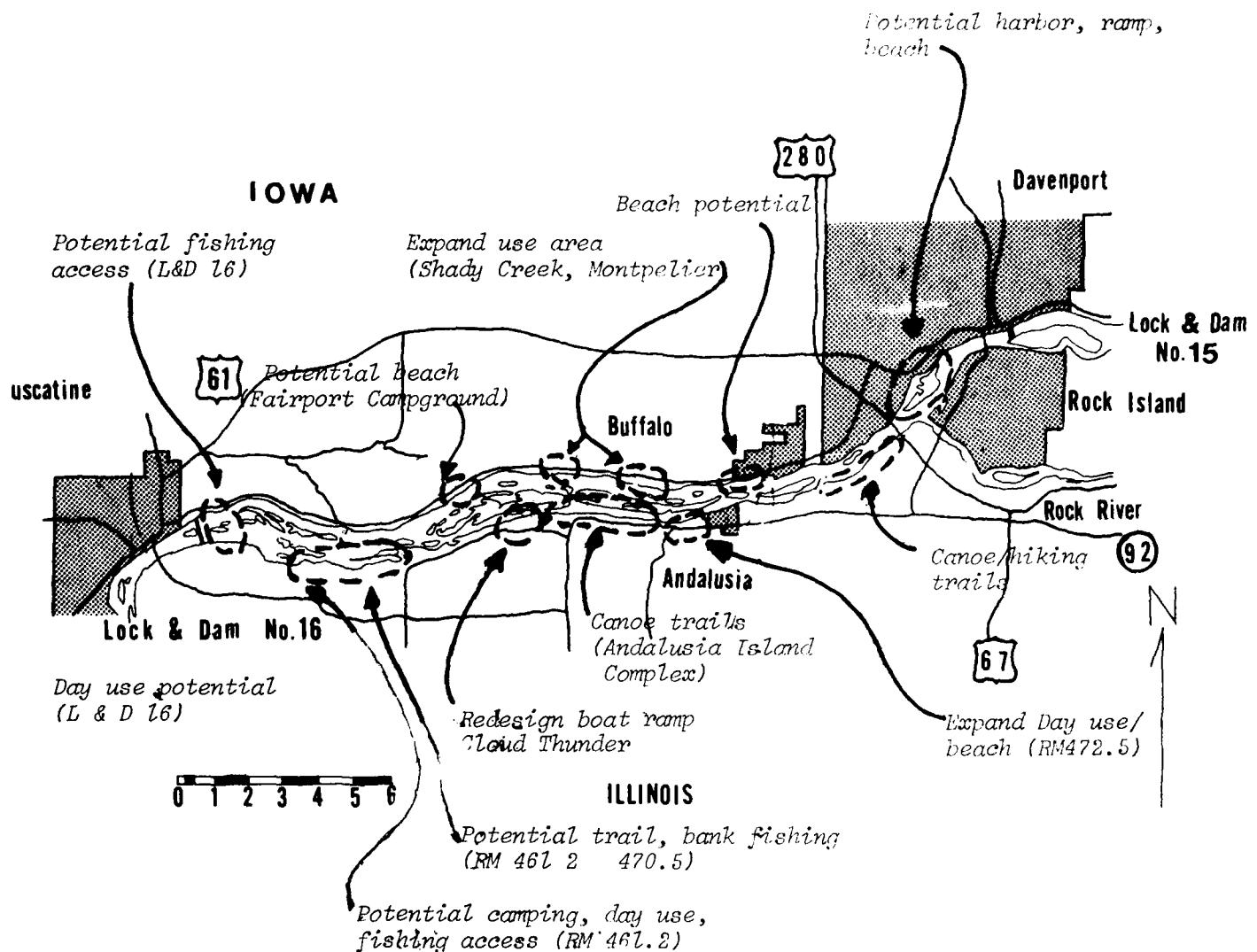
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 15



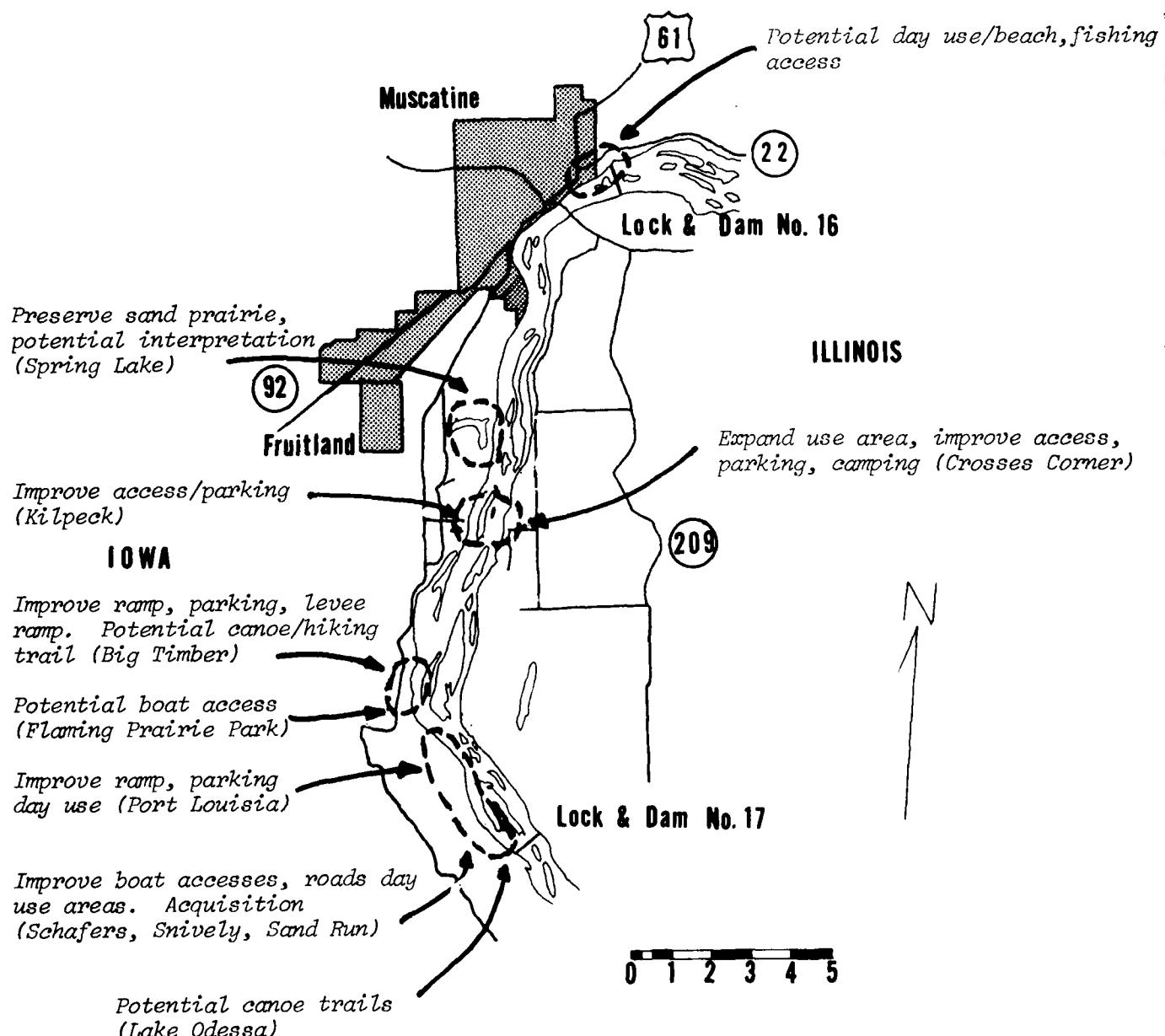
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 16



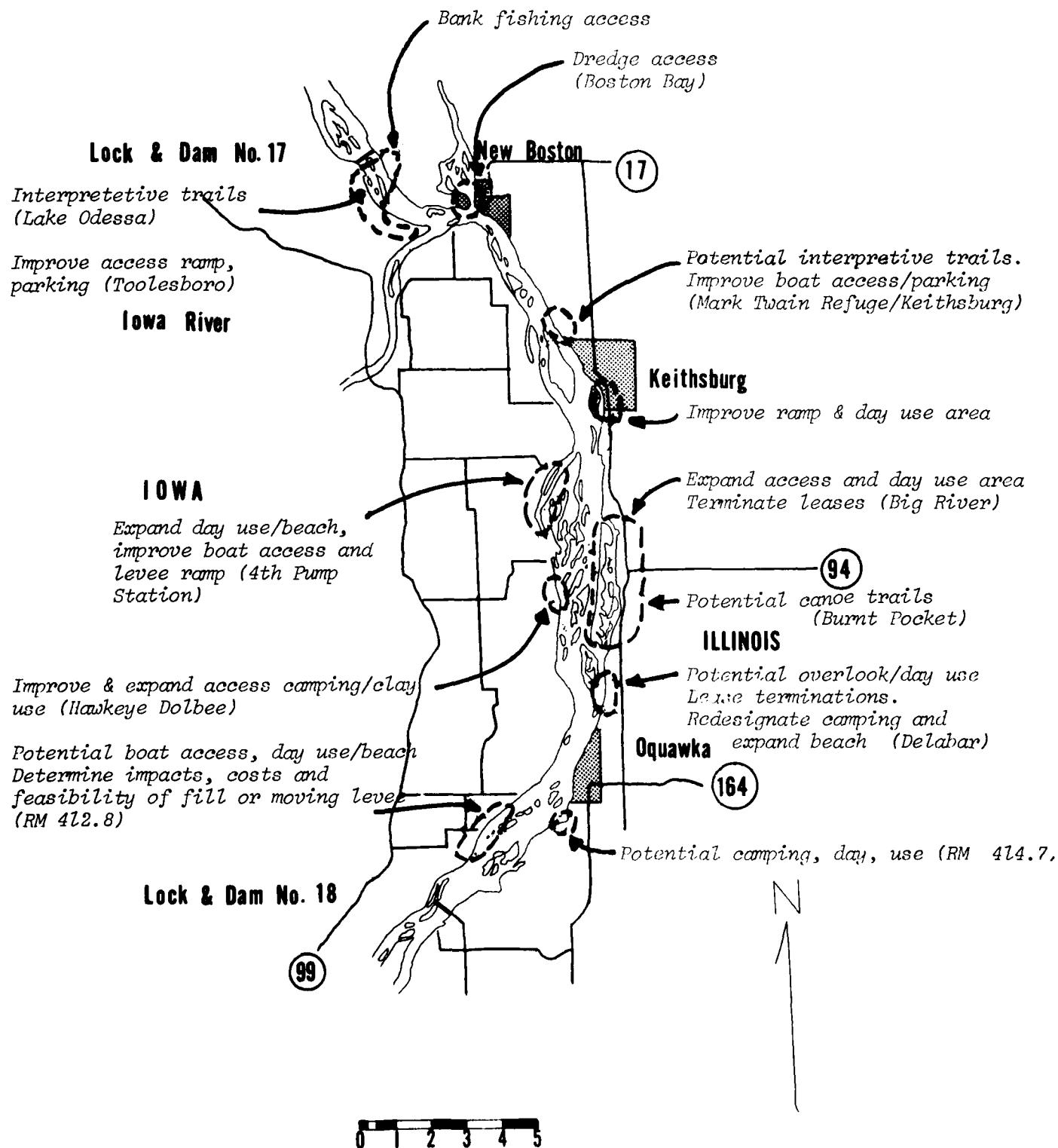
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 17



GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 18



GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 19

Potential day use/beach camping-acquisition (O'Connell Slough)

Lock & Dam No. 18

Potential day use/boat access

61

Burlington

99

Potential ramp/ parking expansion

Gulfport

Potential boat access, interpretative trails

Skunk River

ILLINOIS

IOWA

88

Lomax

Potential day use area improvement

Fort Madison

Day use/beach, camping check water quality-acquisition

218

Potential access/day use-acquisition (RM 480.8)

9

Marina potential if market exists.
Potential boat access/day use, campground - acquisition

Montrose

Dredge access channel
(Riverview Park)

61

Need for additional dredged islands for recreation and safety

N

0 1 2 3 4 5

Hamilton

Keokuk

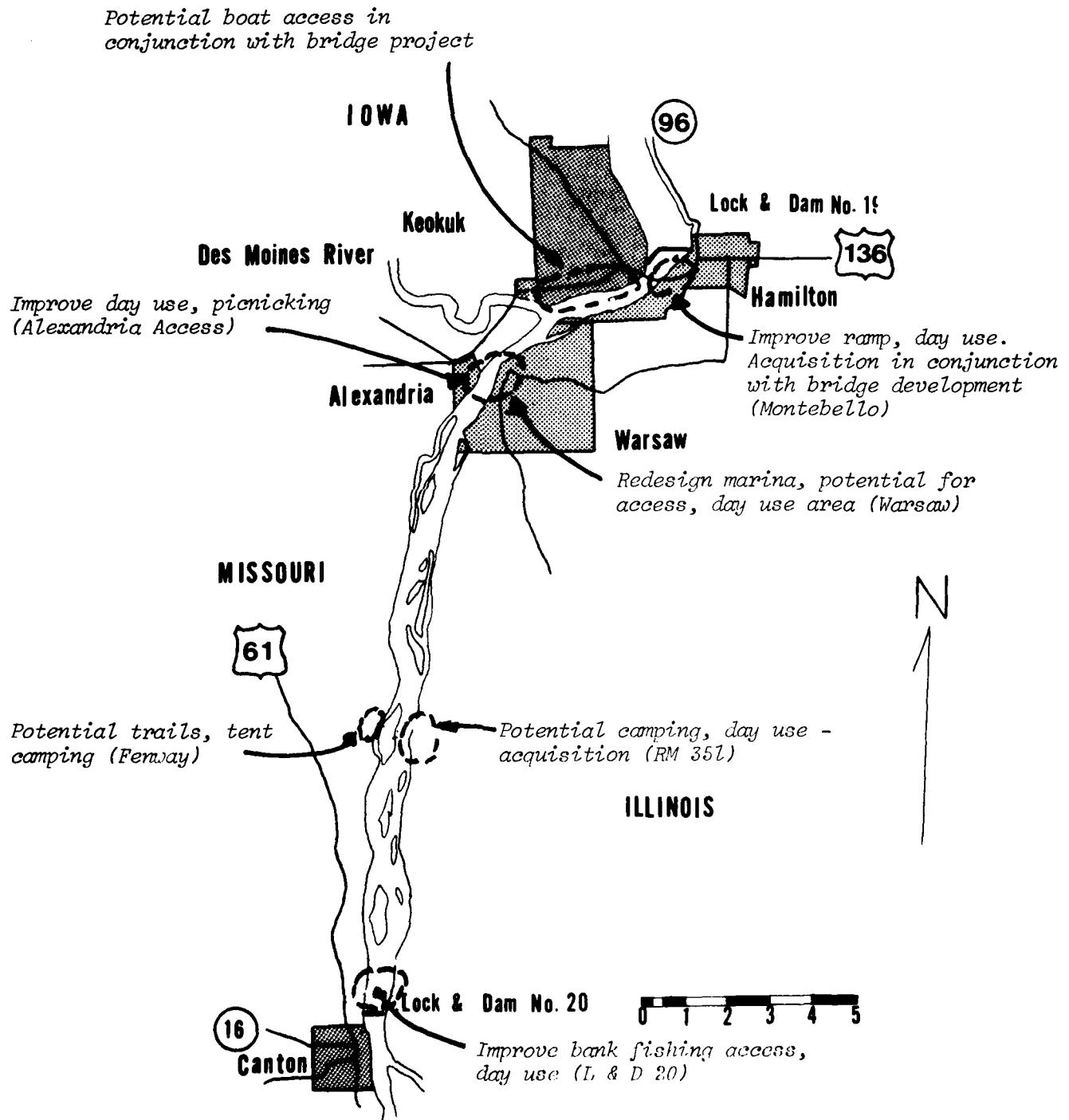
Lock & Dam No. 19

96

136

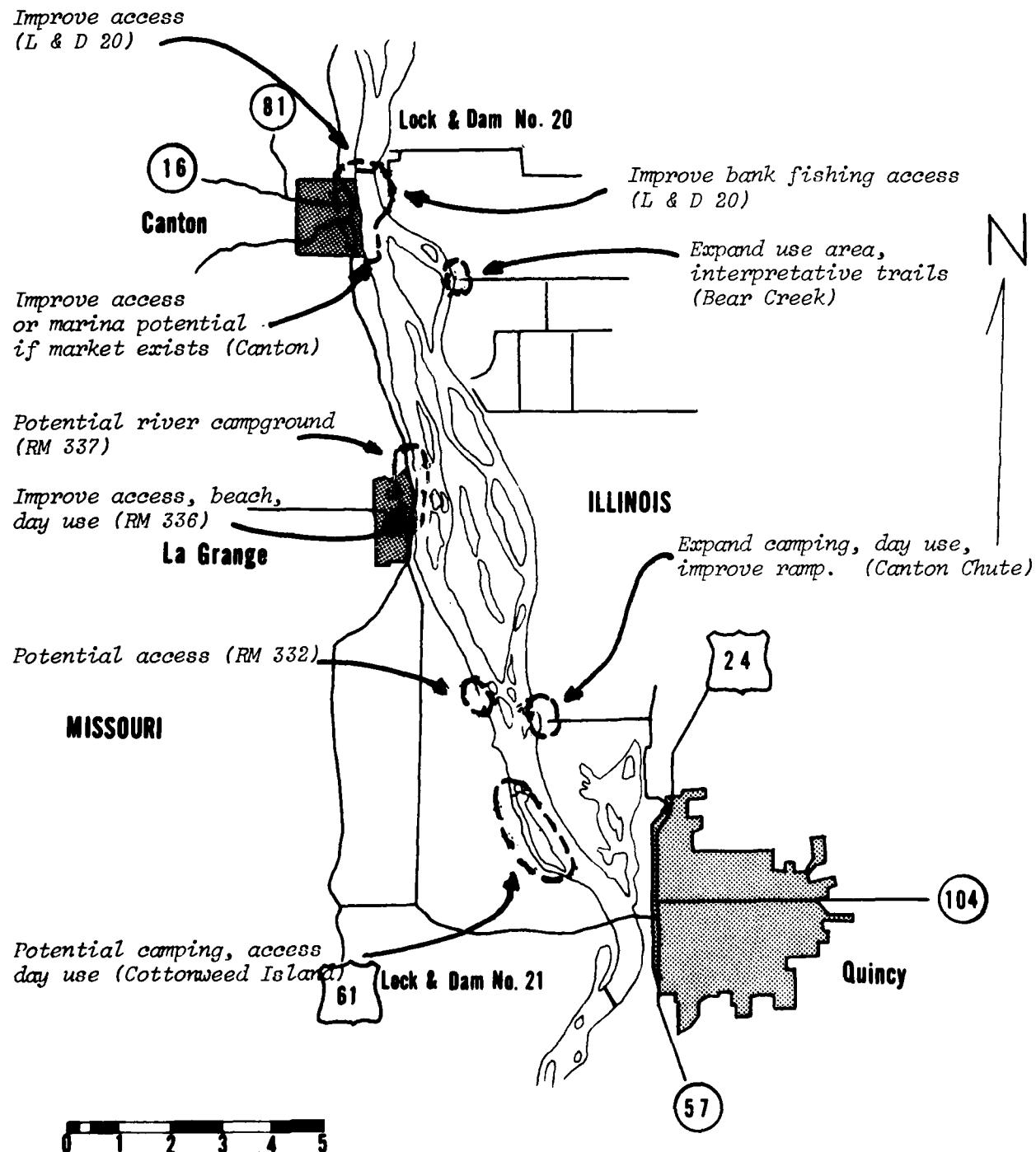
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 20



GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 21

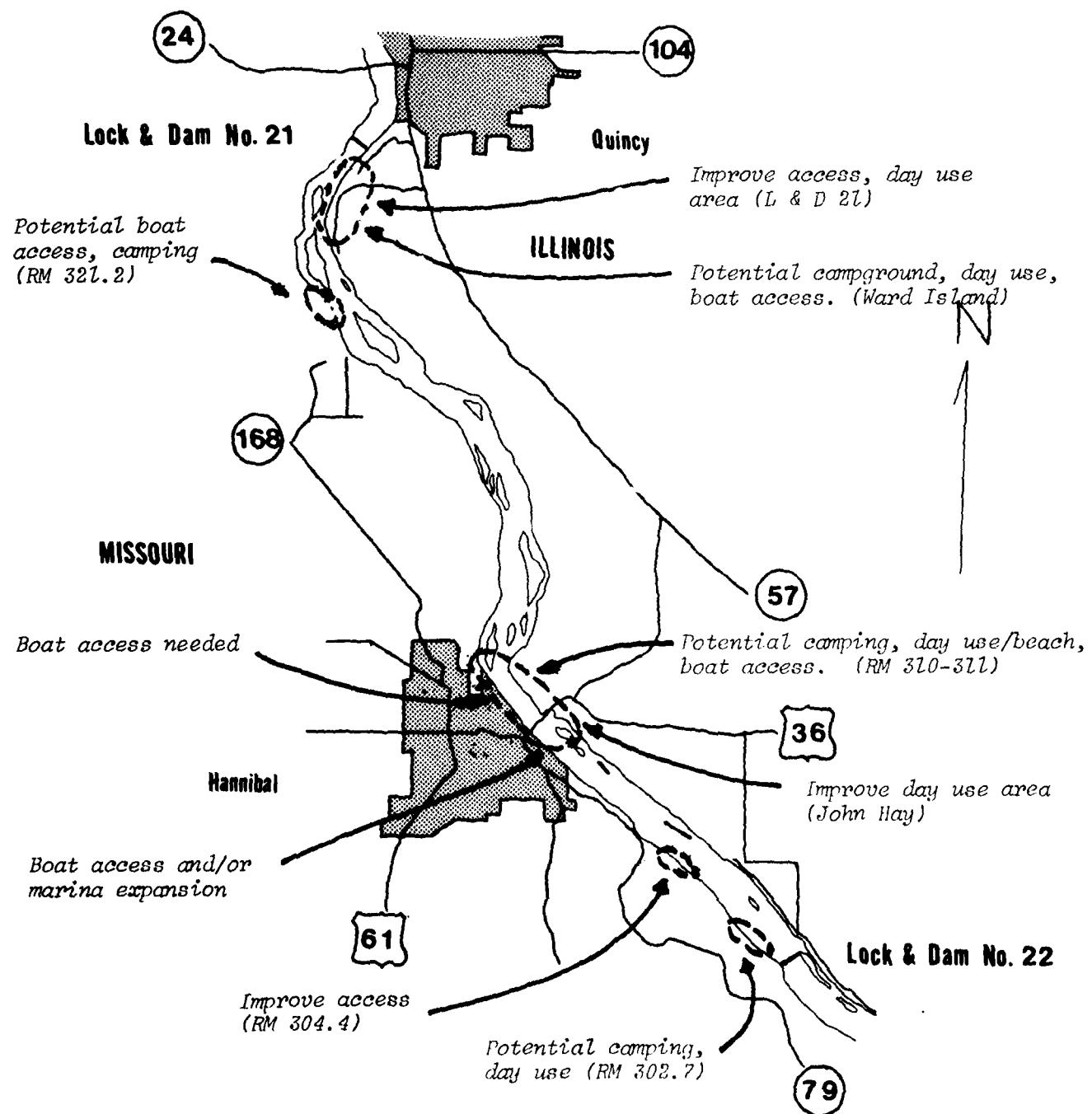


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GENERAL RECREATIONAL NEEDS AND POTENTIALS

Page 45

POOL 22



0 1 2 3 4 5

TABLE 4 PICNICKING
Participation In
Activity Days*

Rel. Adeq. Indicators

Supply Units

Pool	Base Year	2000	2025	WIS	IA	ILL	MO	TOTAL	B.Y. 1	N	2000 ¹	K	2025 ¹	N	R	A	R	A
11	72,261	88,595	105,176	207	90	0	0	297	243	3	298	3	354	3				
12	104,924	127,420	146,757	0	327	55	0	382	274	4	336	4	384	4				
13	101,073	115,810	131,324	0	206	484	0	690	146	1	167	1	190	1				
14	125,844	150,988	171,261	0	380	55	0	435	289	5	347	5	393	5				
15	169,780	198,812	221,716	0	9	324	0	333	509	7	597	7	665	7				
16	159,265	186,324	207,474	0	681	130	0	811	196	2	229	2	255	2				
17	45,273	50,773	55,866	0	24	20	0	44	1,028	9	1,153	10	1,269	10				
18	108,698	112,969	118,795	0	55	206	0	261	416	6	432	6	455	6				
19	92,888	91,244	94,904	0	17	52	0	69	1,346	11	1,322	11	1,375	11				
20	17,602	16,644	18,135	0	1	5	11	17	1,035	10	979	9	1,066	9				
21	142,370	149,915	164,451	0	0	194	5	199	715	8	753	8	826	8				
22	47,007	49,404	53,198	0	0	16	8	24	1,958	12	2,058	12	2,216	12				
TOTAL 1,186,915 1,338,895 1,489,057 207 1,790 1,541 24 3,562																		

Explanation of Tables 4-13:
-Relative Adequacy Indicator = Participation (Activity Days)
Supply Units

-A high ranking (1) indicates greater adequacy
 -A low ranking (12) indicates a deficiency of units within the pool with respect to participation.

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 5 CAMPING--A

Participation In
Activity Days*

Pool	Base Year	2000	2025	WIS	IA	ILL	MO	TOTAL	(Developed Camp Sites)			R	A	R
									B.Y.	1	N			
11	54,196	66,444	78,882	110	150	0	0	260	208	2	255	3	303	3
12	67,892	82,448	94,961	0	77	49	0	126	538	9	654	10	153	11
13	87,536	100,368	113,812	0	346	1,057	0	1,403	62	1	71	1	81	1
14	55,057	66,057	74,927	0	95	135	0	230	239	4	287	4	325	4
15	26,120	30,586	34,110	0	15	80	0	95	274	6	321	6	359	6
16	121,791	142,483	158,656	0	267	80	0	347	351	7	410	8	457	8
17	31,691	35,541	39,106	0	62	58	0	120	264	5	296	5	325	5
18	48,310	50,209	52,798	0	70	154	0	224	215	3	224	2	235	2
19	11,611	11,405	11,863	0	0	0	0	0	0	12	0	12	0	12
20	10,832	10,243	11,160	0	0	0	29	29	373	8	353	7	384	7
21	40,677	42,833	46,986	0	0	60	5	65	625	11	658	11	722	10
22	15,669	16,468	17,733	0	0	18	8	26	602	10	633	9	682	9
TOTAL	571,377	655,085	734,994	110	1,082	1,691	42	2,925						

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 6 CAMPING--B**Participation In
Activity Days***

Pool	Base Year	2000	2025	WIS	IA	ILL	MO	TOTAL	(Pot. Camp Sites) ²			Rel. Adeq. Indicators		
									B.Y.	1	N	R	A	R
11	74,196	66,444	78,882	73	21	0	0	94	576	6	706	6	839	6
12	67,892	82,448	94,961	20	25	16	0	61	1,112	10	1,351	10	1,556	10
13	87,536	100,368	113,812	0	23	70	0	93	941	9	1,079	9	1,223	9
14	55,057	66,057	74,927	0	42	37	0	79	696	7	836	7	948	7
15	26,120	30,586	34,110	0	0	2	0	2	13,060	12	15,293	12	17,055	12
16	121,791	142,483	158,656	0	17	9	0	26	4,684	11	5,480	11	6,102	11
17	31,691	35,541	39,106	0	3	33	0	36	880	8	987	8	1,086	8
18	48,310	50,209	52,798	0	42	70	0	112	431	4	448	4	471	4
19	11,611	11,405	11,863	0	24	44	0	68	170	1	167	1	174	1
20	10,832	10,243	11,160	0	0	25	32	57	190	2	179	2	195	2
21	40,677	42,833	46,833	0	0	66	5	71	572	5	603	5	661	5
22	15,669	16,468	17,733	0	0	45	6	51	307	3	322	3	347	3
TOTAL	571,377	655,085	734,994	93	197	417	43	750						

¹Number of activity days per supply unit.²Sand areas at least 100 feet long by 100 feet wide identified by RWG II from 1977 aerial photographs.

*Data should only be used for comparison purposes.

TABLE 7 SWIMMING

Participation In
Activity Days*

Pool	Base Year	2000	2025	WIS	IA	ILL	MO	TOTAL	(Approximate Beach Frontage)			Supply Units			Rel. Adeq. Indicators		
									R	A	R	A	R	A	R	A	R
11	42,152	51,679	61,353	7,300	3,800	0	0	11,100	3.8	5	4.6	5	5.5	5	5.5	5	
12	24,688	29,981	34,531	2,000	1,600	2,500	0	6,100	4.0	6	4.9	6	5.6	6	5.6	6	
13	20,201	23,162	26,264	0	3,500	7,000	0	10,500	1.9	2	2.2	2	2.5	2	2.5	2	
14	31,461	37,747	42,815	0	5,800	5,200	0	11,000	2.8	4	3.4	4	3.9	4	3.9	4	
15	13,060	15,293	17,055	0	1,000	200	0	1,200	10.9	12	12.7	12	14.2	12	14.2	12	
16	37,474	43,841	48,817	0	3,000	900	0	3,900	9.6	10	11.2	10	12.5	11	12.5	11	
17	18,109	20,309	22,346	0	300	3,300	0	3,600	5.0	7	5.6	7	6.2	7	6.2	7	
18	36,233	37,656	39,598	0	5,400	8,000	0	13,400	2.7	3	2.8	3	2.9	3	2.9	3	
19	81,277	79,838	83,041	0	2,400	4,400	0	6,800	11.9	11	11.7	11	12.2	10	12.2	10	
20	4,062	3,841	4,185	0	0	2,600	3,800	6,400	.63	1	.60	1	.65	1	.65	1	
21	70,155	64,249	70,479	0	0	7,300	1,300	8,600	8.1	8	7.5	8	8.2	8	8.2	8	
22	86,180	90,575	97,529	0	0	8,500	2,000	10,500	8.2	9	8.6	9	9.3	9	9.3	9	
TOTAL	465,052	498,171	548,013														

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 8 WATER SKIING

Participation In
Activity Days*

Pool	Base	Year	2000	2025	WIS	IA	ILL	(Hard Surface Ramps)			Rel. Adeq. Indicators			
								MO	TOTAL	B.Y.	R	A	R	
								1	K	2000	N	A	R	
11	30,109	36,913	43,823	6	4	0	0	10	3,010	6	3,691	6	4,382	6
12	37,032	44,972	51,797	2	8	7	0	17	2,178	2	2,645	3	3,046	3
13	53,868	61,765	70,039	0	6	14	0	20	2,693	4	3,088	4	3,501	4
14	62,922	75,494	85,631	0	9	12	0	21	2,996	5	3,594	5	4,077	5
15	52,240	61,173	68,220	0	2	8	0	10	5,224	9	6,117	9	6,822	9
16	93,685	109,602	122,043	0	12	12	0	24	3,903	7	4,566	7	5,085	7
17	31,691	35,541	39,106	0	5	2	0	7	4,527	8	5,077	8	5,586	8
18	42,271	43,933	46,198	0	2	16	0	18	2,348	3	2,440	2	2,566	2
19	127,721	125,460	130,493	0	8	7	0	15	8,514	12	8,364	12	8,699	12
20	8,124	7,682	8,370	0	4	2	3	9	902	1	853	1	930	1
21	122,031	128,499	140,958	0	0	17	2	19	6,422	10	6,763	10	7,418	10
22	54,842	57,638	62,064	0	0	6	2	8	6,855	11	7,204	11	7,758	11
TOTAL	716,536	788,672	868,742	8	60	103	7	178						

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 9 BOATING--A

Participation In
Activity Days*

Pool	Base Year	2000	2025	WIS	IA	ILL	MO	TOTAL	(All Ramp Types)			Rel. Adeq. Indicators					
									R	R	R	A	A	A			
									1	2000	1	N	2025	1	K	N	K
11	337,218	413,429	490,821	11	9	0	0	20	16,860	5	20,671	5	24,541	5			
12	364,148	442,221	509,334	2	9	8	0	19	19,165	6	23,274	7	26,807	7			
13	417,477	478,679	542,804	0	14	17	0	31	13,467	2	15,441	2	17,510	2			
14	511,241	613,387	695,748	0	19	12	0	31	16,491	4	19,786	4	22,443	4			
15	528,930	619,377	690,730	0	2	8	0	10	52,893	12	61,937	12	69,073	12			
16	505,899	591,851	659,035	0	13	13	0	26	19,457	7	22,763	6	25,348	6			
17	271,635	304,639	335,198	0	6	2	0	8	33,954	9	38,079	9	41,900	10			
18	344,209	357,736	376,186	0	5	16	0	21	16,390	3	17,035	3	17,914	3			
19	731,493	718,546	747,366	0	10	8	0	18	40,638	10	39,919	10	41,520	9			
20	78,532	74,260	80,911	0	4	3	5	12	6,544	1	6,188	1	6,743	1			
21	630,494	663,910	728,283	0	0	19	2	21	30,023	8	31,614	8	34,680	8			
22	383,891	403,469	434,449	0	0	6	2	8	47,986	11	50,433	11	54,306	1			
TOTAL		5,105,167	5,681,504	6,290,865	13	91	112	9	225								

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 10 BOATING--B

Pool	Base Year	Participation In Activity Days*						Supply Units						Rel. Adeq. Indicators					
		2000			2025			(Parking Spaces)			R			R			R		
		WIS	IA	ILL	MO	TOTAL	B.Y.	1	N	2000 ¹	K	2025 ¹	K	A	A	A	N	N	
11	337,218	413,429	490,821	200	383	0	0	583	578	4	709	4	842	4					
12	364,148	442,221	509,334	24	453	295	0	772	471	3	572	3	660	3					
13	417,477	478,679	542,804	0	361	684	0	1,045	399	1	458	2	519	2					
14	511,241	613,387	695,748	0	254	265	0	519	985	6	1,181	6	1,341	6					
15	528,930	619,377	690,730	0	50	115	0	165	3,205	12	3,753	12	4,186	12					
16	505,899	591,851	659,035	0	505	145	0	650	778	5	910	5	1,014	5					
17	271,635	304,639	335,198	0	179	27	0	206	1,318	7	1,478	8	1,627	8					
18	344,209	357,736	376,186	0	85	165	0	250	1,376	8	1,430	7	1,505	7					
19	731,493	718,546	747,366	0	187	92	0	279	2,621	10	2,575	10	2,679	10					
20	78,532	74,260	80,911	0	40	65	71	176	446	2	421	1	460	1					
21	630,494	663,910	728,283	0	0	313	55	368	1,713	9	1,804	9	1,979	9					
22	383,891	403,469	434,449	0	0	42	90	132	2,908	11	3,056	11	3,291	11					
TOTAL		5,105,167	5,681,504	6,290,865	224	2,497	2,208	216	5,145										

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 11 BOATING--C

Participation In
Activity Days*

Pool	Base Year	2000	2025	WIS	IA	III	MO	TOTAL	Supply Units			Rel. Adeq. Indicators		
									(Marina Slips)	R	R	R	A	A
B.Y.	1	N	K	2000	1	N	K	2025	1	N	K	1	N	K
11	337,218	413,429	490,821	0	222	0	0	222	1,519	5	1,862	5	2,211	6
12	364,148	442,221	509,334	0	464	613	0	1,077	338	1	410	1	473	1
13	417,477	478,679	542,804	0	106	95	0	201	2,077	7	2,381	7	2,700	8
14	511,241	613,387	695,748	0	532	95	0	627	815	3	978	3	1,110	3
15	528,930	619,377	690,730	0	130	188	0	318	1,663	6	1,947	6	2,172	5
16	505,899	591,851	659,035	0	40	425	0	465	1,088	4	1,272	4	1,417	4
17	271,635	304,639	335,198	0	90	0	0	90	3,018	10	3,384	10	3,724	10
18	344,209	357,736	376,186	0	0	96	0	96	3,585	12	3,726	12	3,919	12
19	731,493	718,546	747,366	0	301	0	0	301	2,430	8	2,387	8	2,483	7
20	78,532	74,260	80,911	0	96	0	2	98	801	2	757	2	826	2
21	630,494	663,910	728,283	0	0	248	2	250	2,522	9	2,655	9	2,913	9
22	383,891	403,469	434,449	0	0	0	116	116	3,309	11	3,478	11	3,745	11
TOTAL	5,105,167	5,681,504	6,290,865	0	1,755	1,760	120	3,635						

1 Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 12 FISHING

Participation In
Activity Days*

Pool	Base Year	2000	2025	(All Ramp Types)				Supply Units				Rel. Adeq. Indicators			
				WIS	IA	ILL	MO	TOTAL	B.Y. 1	K	2000	1	K	2025	1
11	355,283	435,577	517,115	11	9	0	0	20	17,764	4	21,778	5	25,855	5	R
12	388,836	472,202	543,865	2	9	8	0	19	20,465	6	24,852	6	28,624	7	A
13	383,810	440,076	499,029	0	14	17	0	31	12,380	2	14,196	2	16,097	2	A
14	479,780	575,640	652,933	0	19	12	0	31	15,476	3	18,569	3	21,062	3	A
15	274,260	321,158	358,156	0	2	8	0	10	27,426	9	32,115	9	35,815	9	R
16	562,110	657,612	732,261	0	13	13	0	26	21,619	7	25,292	7	28,163	6	A
17	307,853	345,257	379,891	0	6	2	0	8	38,481	11	43,157	11	47,486	11	A
18	428,751	445,601	468,582	0	5	16	0	21	20,416	5	21,219	4	22,313	4	R
19	673,438	661,518	688,052	0	10	8	0	18	37,413	10	36,751	10	38,225	10	A
20	93,426	88,344	96,257	0	4	3	5	12	7,785	1	7,362	1	8,021	1	R
21	528,801	556,827	610,818	0	0	19	2	21	25,181	8	26,515	8	29,086	8	A
22	423,063	444,639	478,780	0	0	6	2	8	52,882	12	55,579	12	59,847	12	R
TOTAL	4,899,411	5,444,451	6,027,739	13	91	112	9	225							

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 13 HUNTING

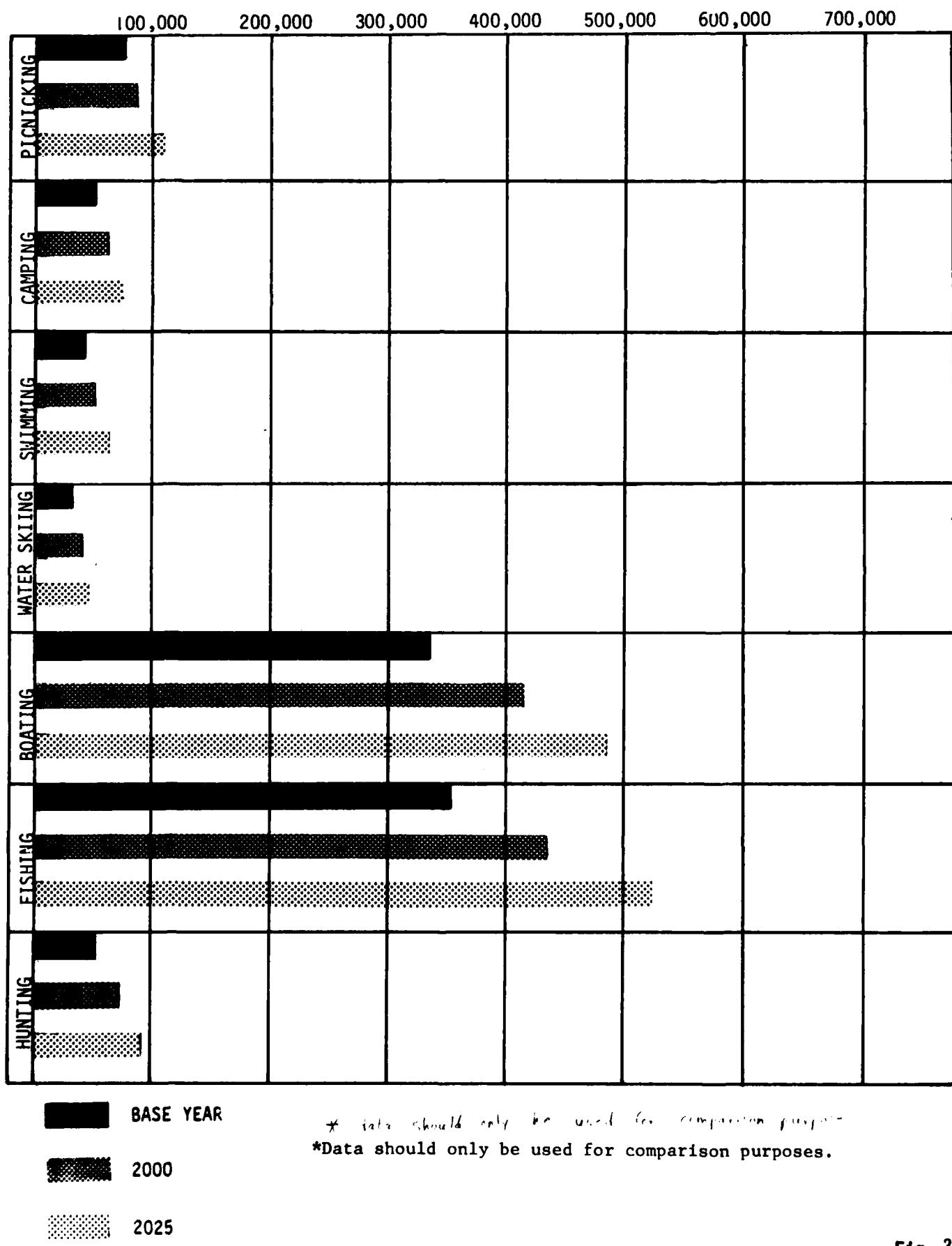
Participation In
Activity Days*

Pool	Base Year	Supply Units						Rel. Adeq. Indicators								
		2000	2025	WIS	IA	ILL	MO	TOTAL	B.Y.	1	K	2000	1	K	2025	1
(All Ramp Types)																
11	66,237	81,209	96,411	11	9	0	0	20	3,311	5	4,060	5	4,821	5		
12	74,064	89,943	103,593	2	9	8	0	19	3,898	6	4,733	7	5,452	7		
13	87,536	100,368	113,814	0	14	17	0	31	2,823	4	3,237	4	3,671	4		
14	47,192	56,620	64,222	0	19	12	0	31	1,522	3	1,826	3	2,072	3		
15	6,530	7,647	8,528	0	2	8	0	10	653	1	764	1	853	1		
16	103,054	120,562	134,248	0	13	13	0	26	3,963	7	4,637	6	5,163	6		
17	72,436	81,237	89,386	0	6	2	0	8	9,054	10	10,154	11	11,173	11		
18	114,736	119,245	125,395	0	5	16	0	21	5,463	8	5,678	8	5,971	8		
19	185,776	182,488	189,807	0	10	8	0	18	10,320	11	10,138	10	10,545	10		
20	17,602	16,644	18,135	0	4	3	5	12	1,466	2	1,387	2	1,511	2		
21	172,877	182,040	199,690	0	0	19	2	21	8,232	9	8,668	9	9,509	9		
22	117,518	123,511	132,995	0	0	6	2	8	14,689	12	15,438	12	16,624	12		
TOTAL		1,065,558	1,161,514	1,276,224	13	91	112	9	225							

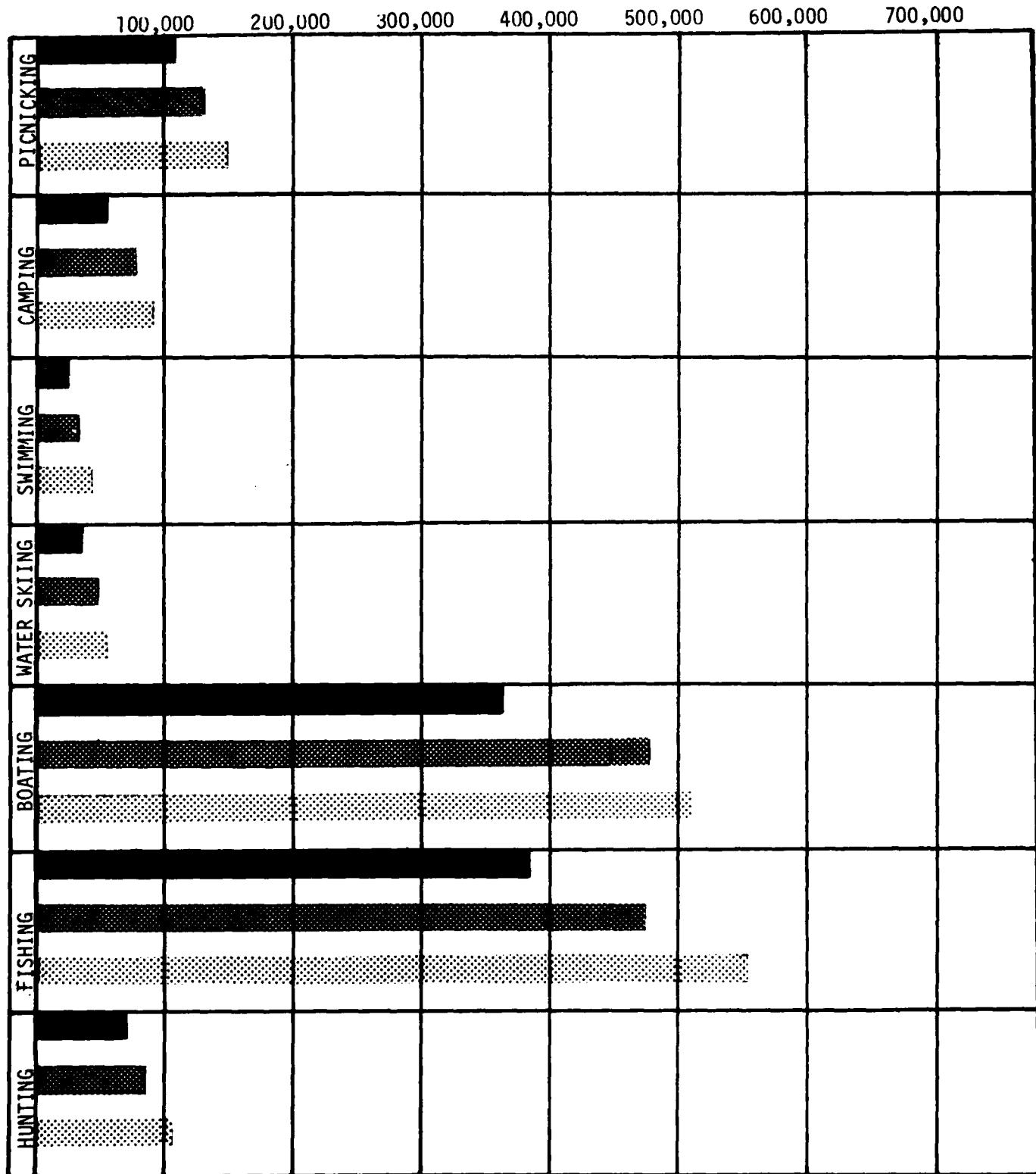
1 Number of supply units per activity day.

*Data should only be used for comparison purposes.

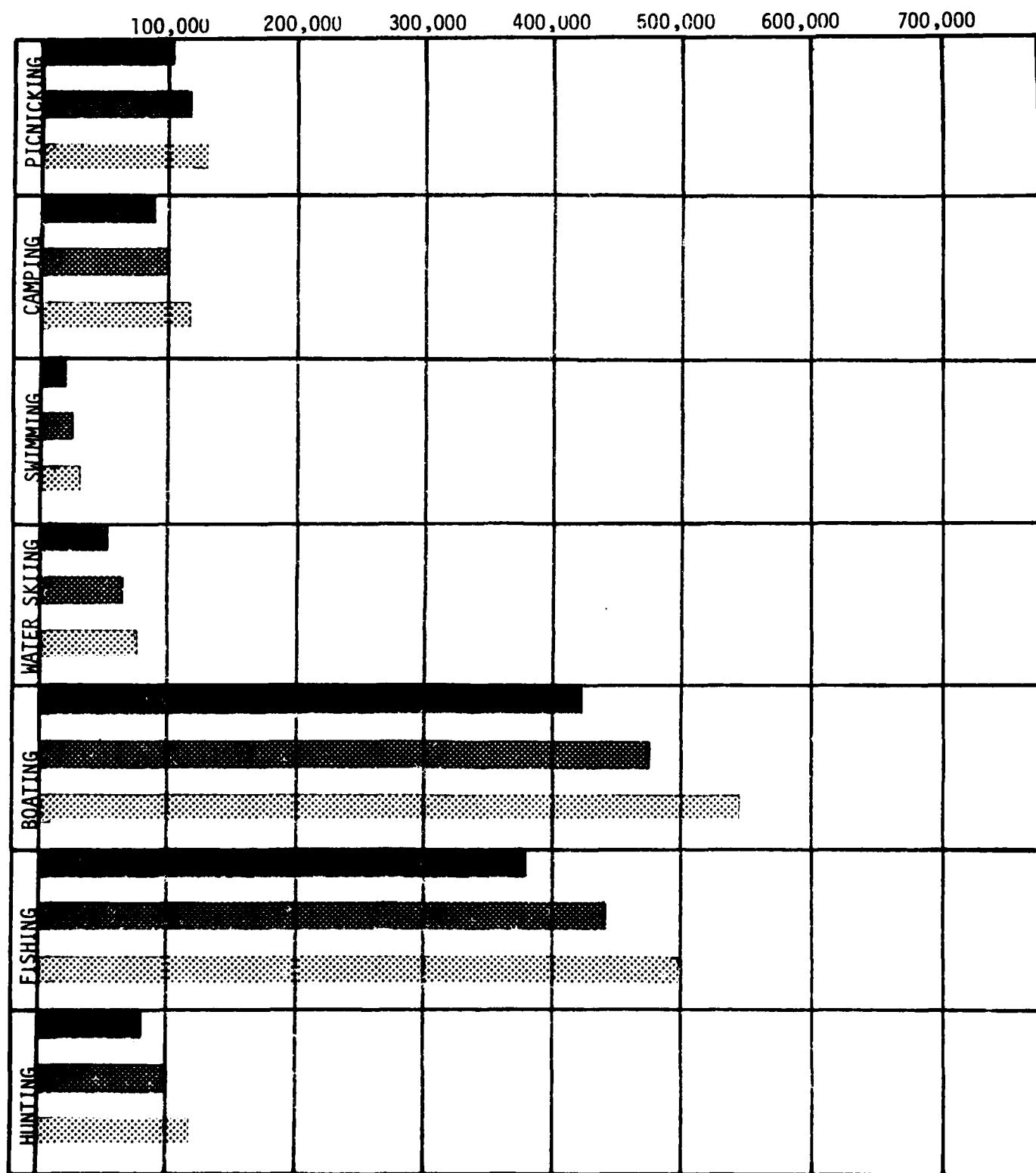
RECREATIONAL USE ANALYSIS - POOL II *



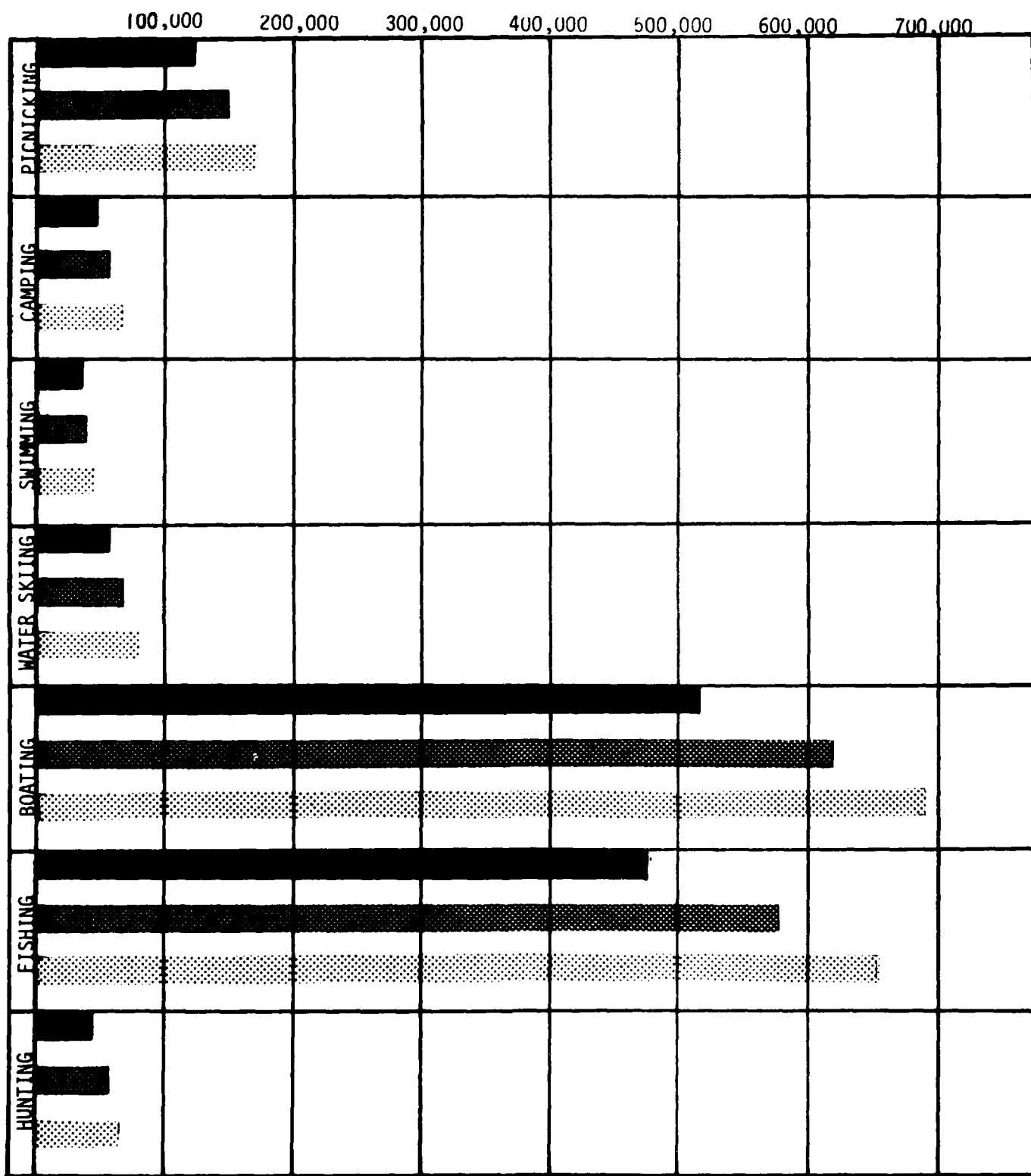
RECREATIONAL USE ANALYSIS - POOL 12*



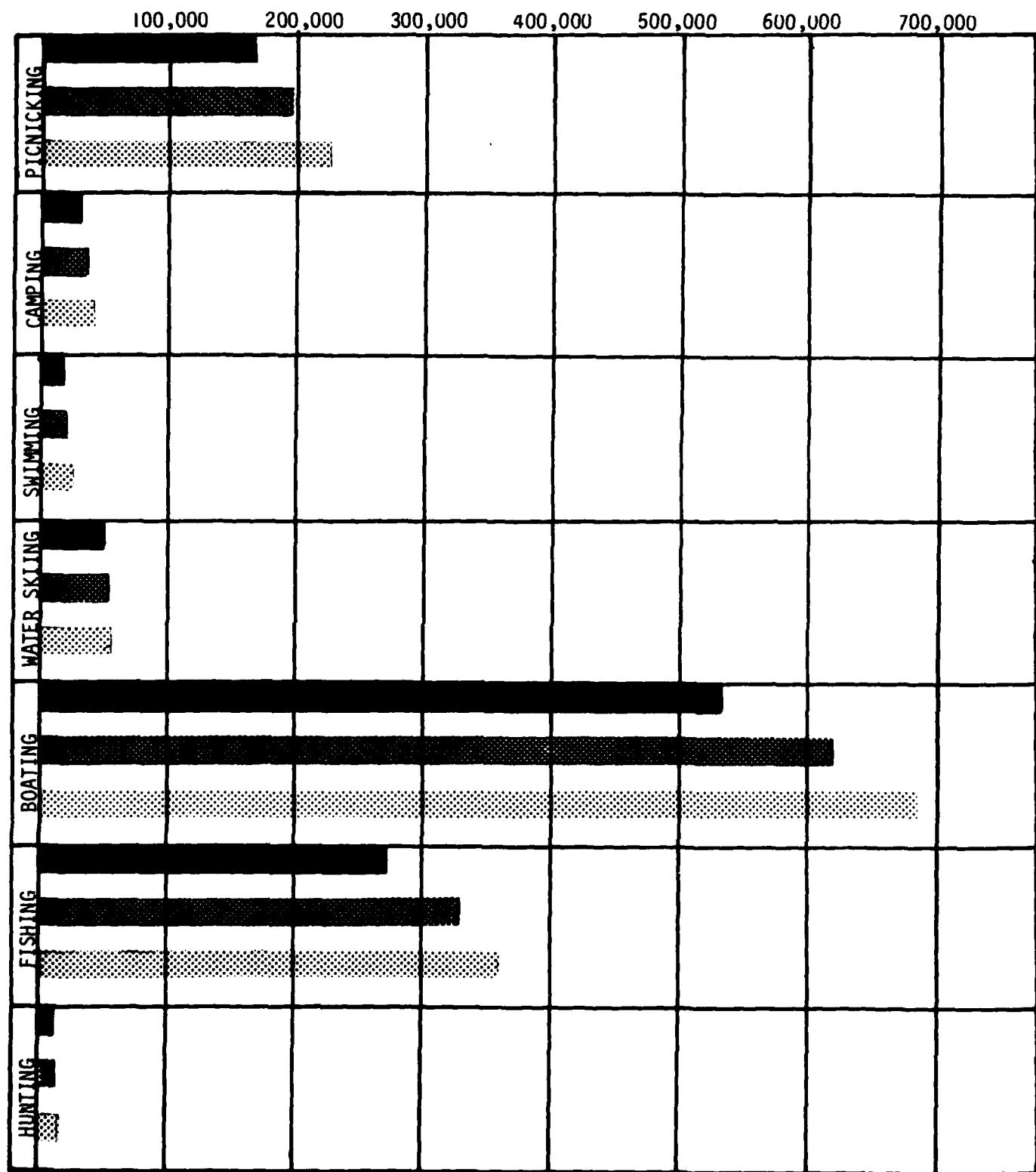
RECREATIONAL USE ANALYSIS-POOL 13 *



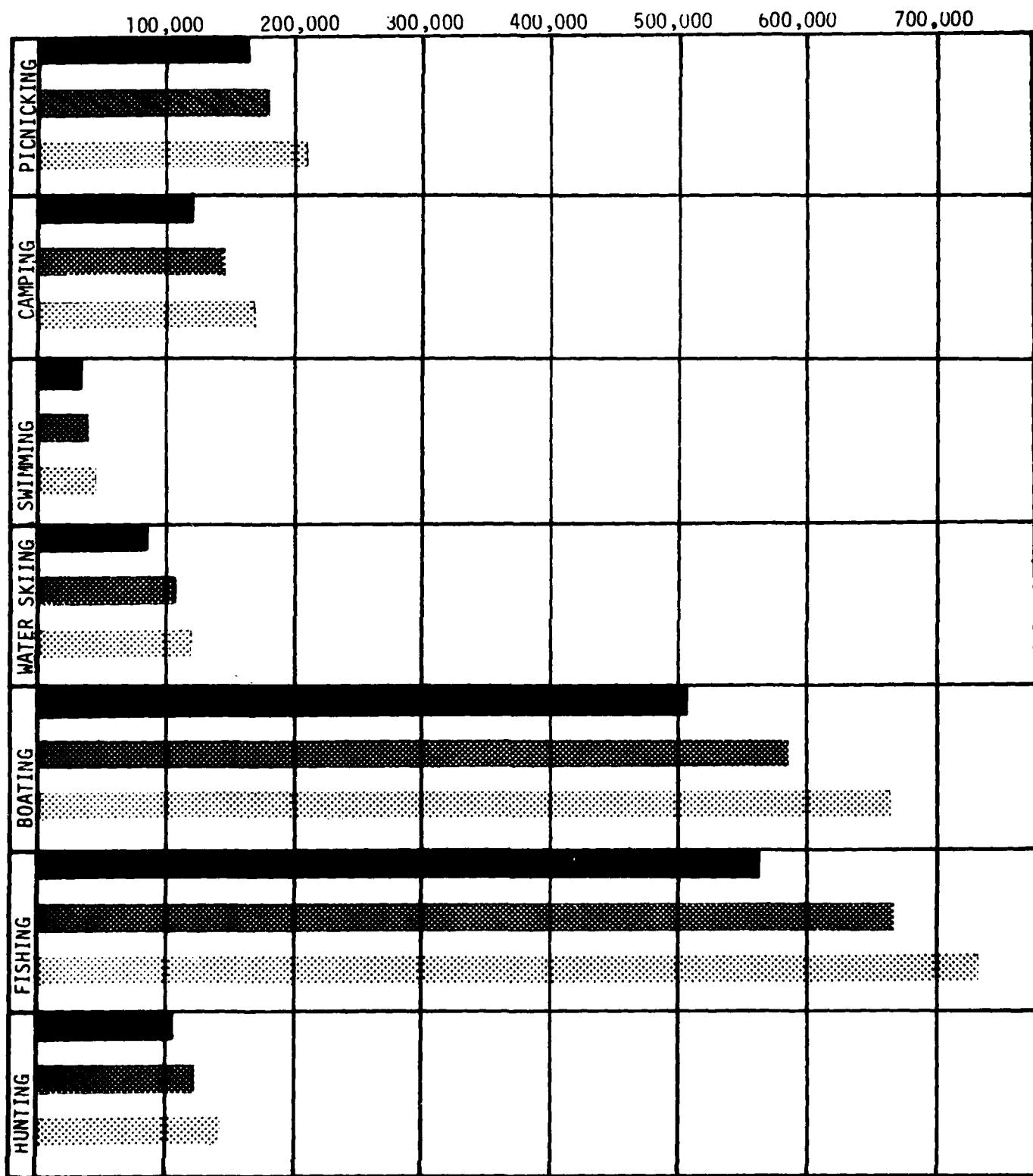
RECREATIONAL USE ANALYSIS - POOL 14 *



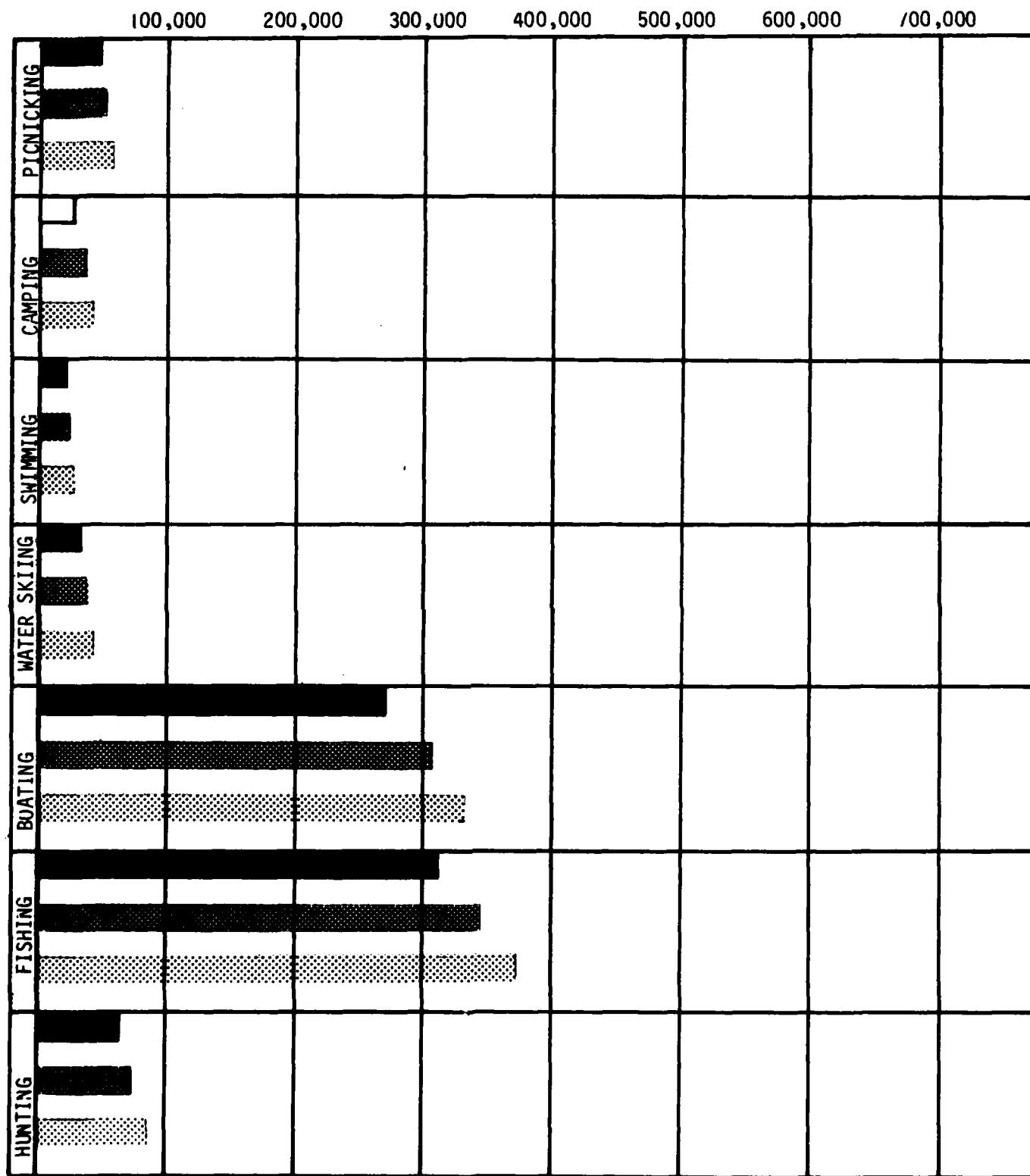
RECREATIONAL USE ANALYSIS - POOL 15 *



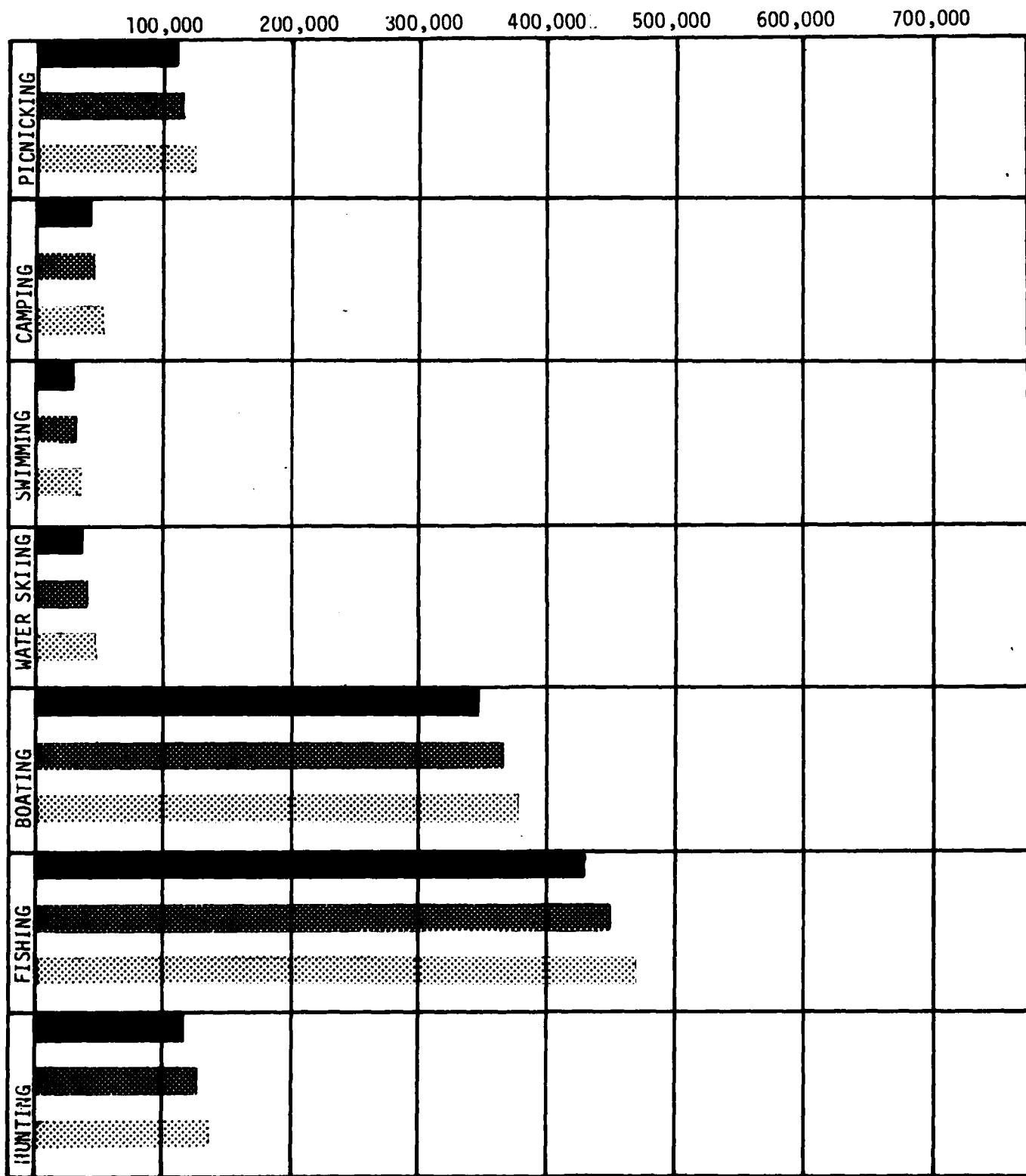
RECREATIONAL USE ANALYSIS - POOL 16*



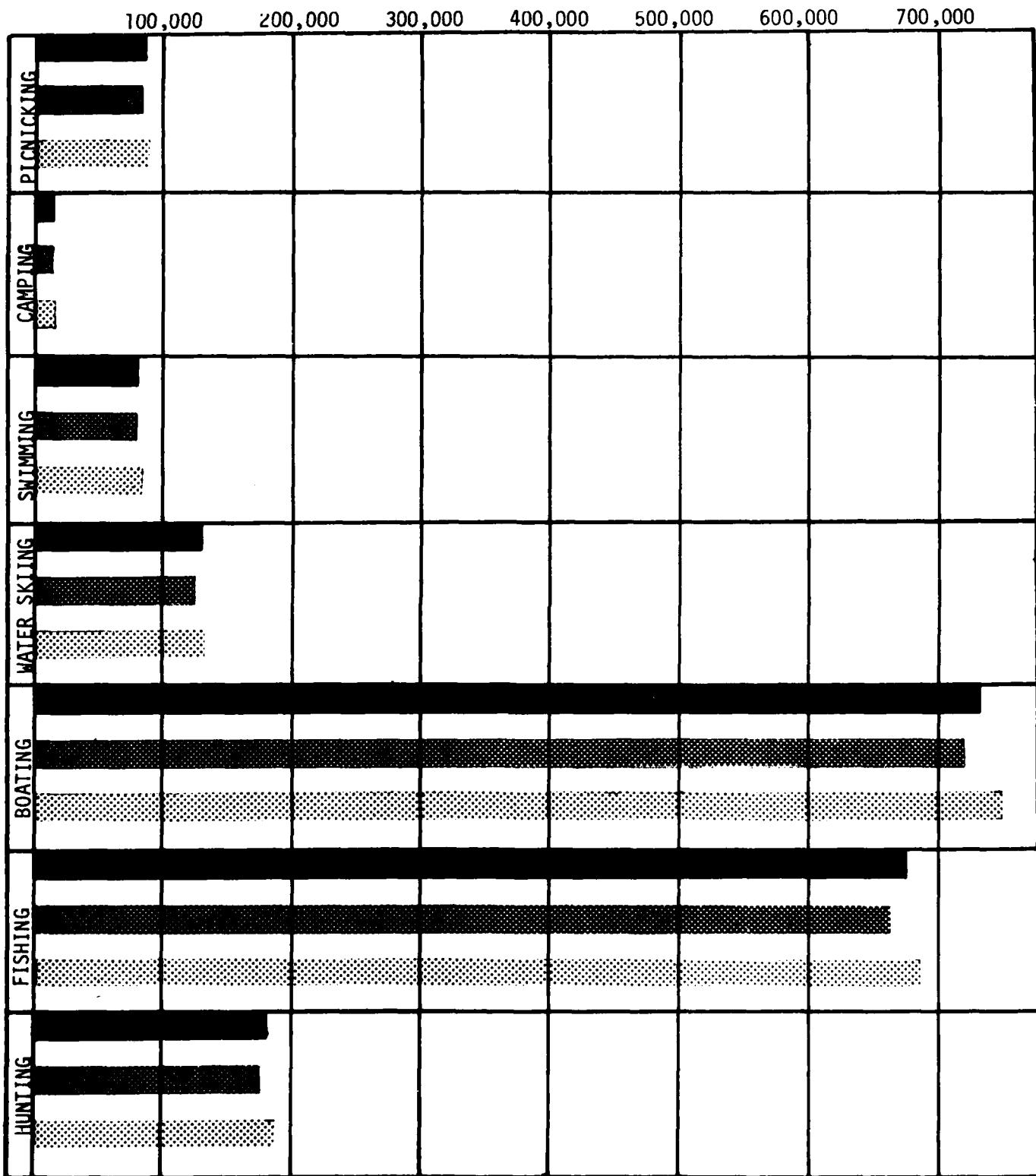
RECREATIONAL USE ANALYSIS-POOL 17*



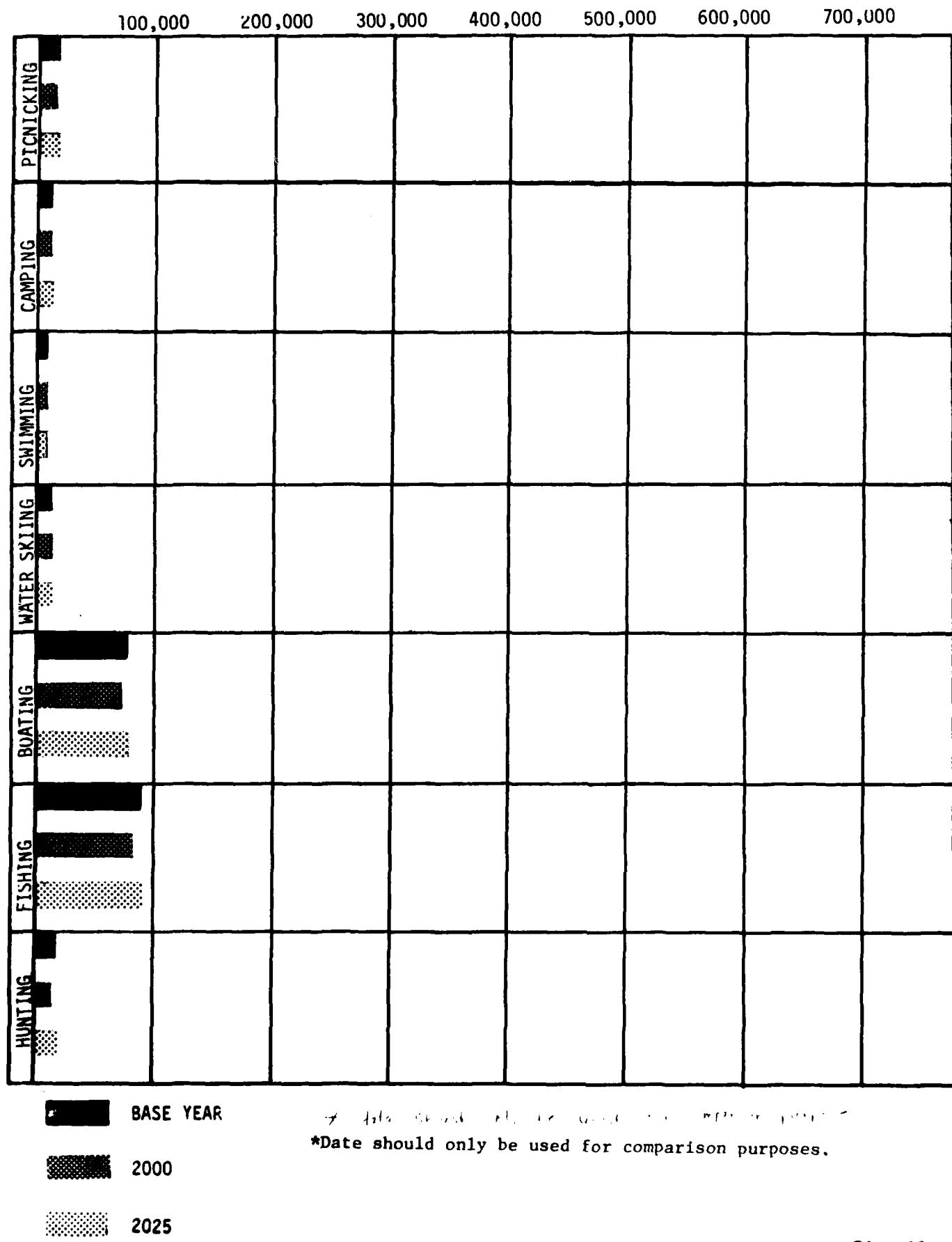
RECREATIONAL USE ANALYSIS - POOL 18 *



RECREATIONAL USE ANALYSIS - POOL 19*



RECREATIONAL USE ANALYSIS - POOL 20 *



RECREATIONAL USE ANALYSIS - POOL 21 *

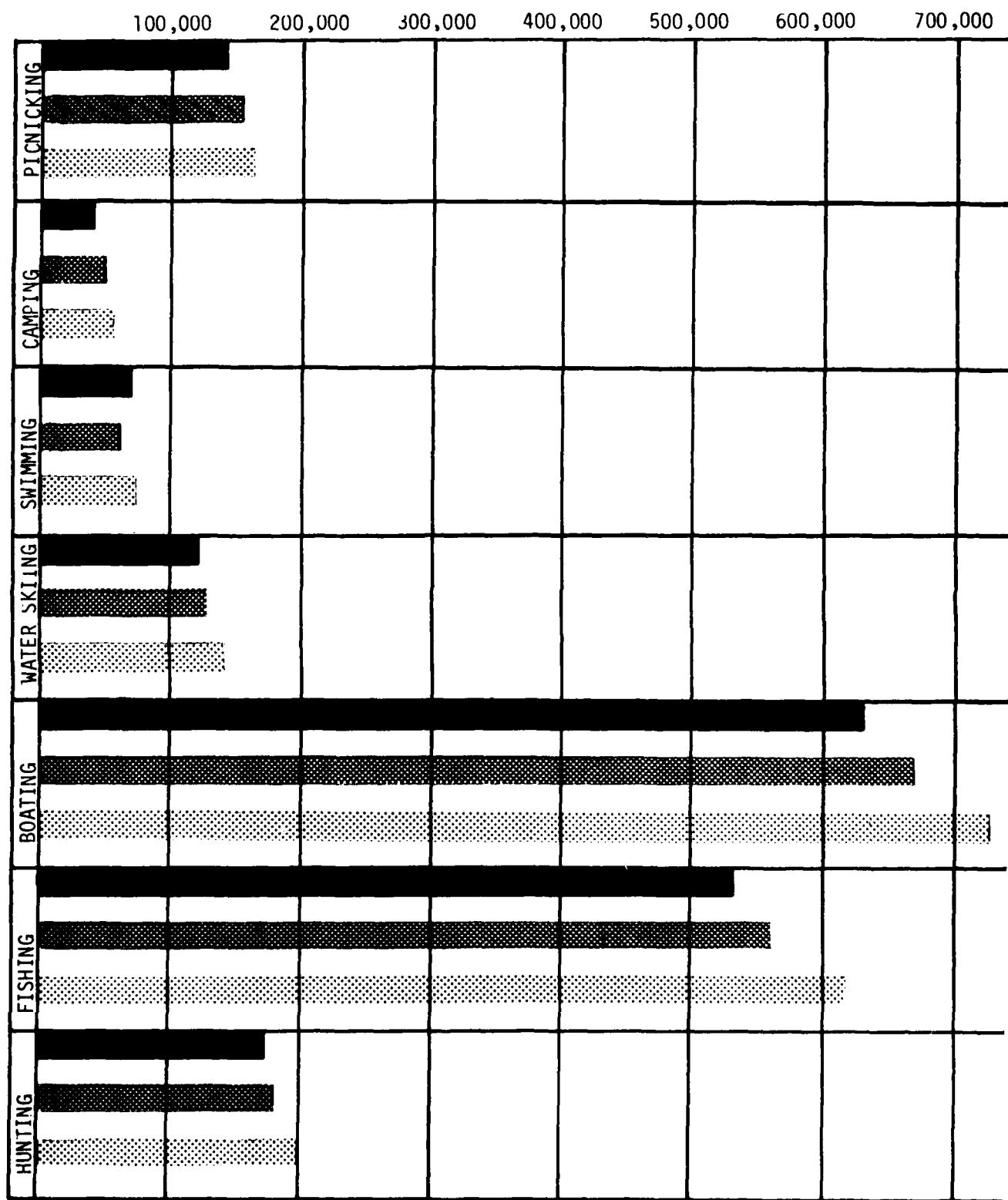
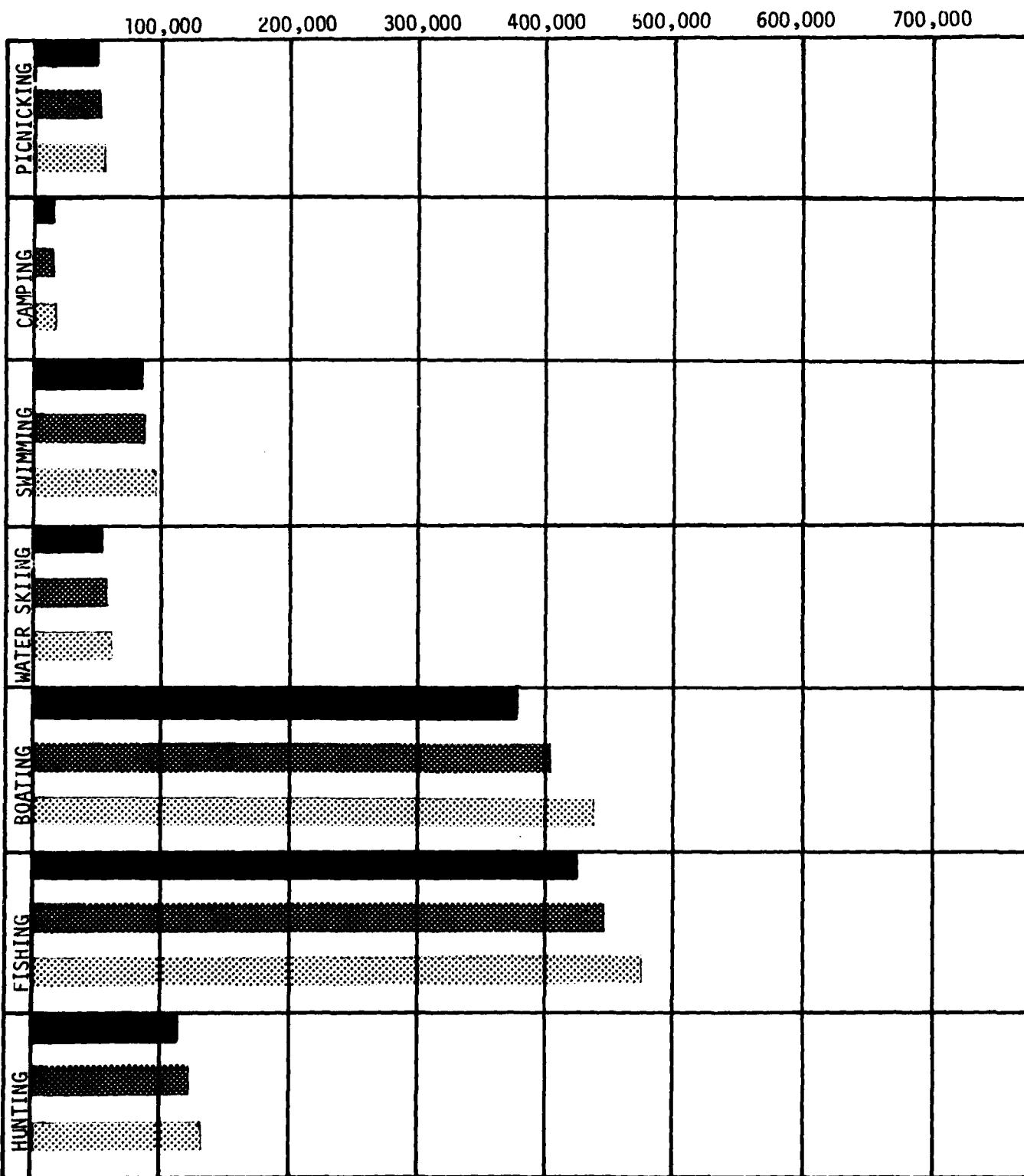


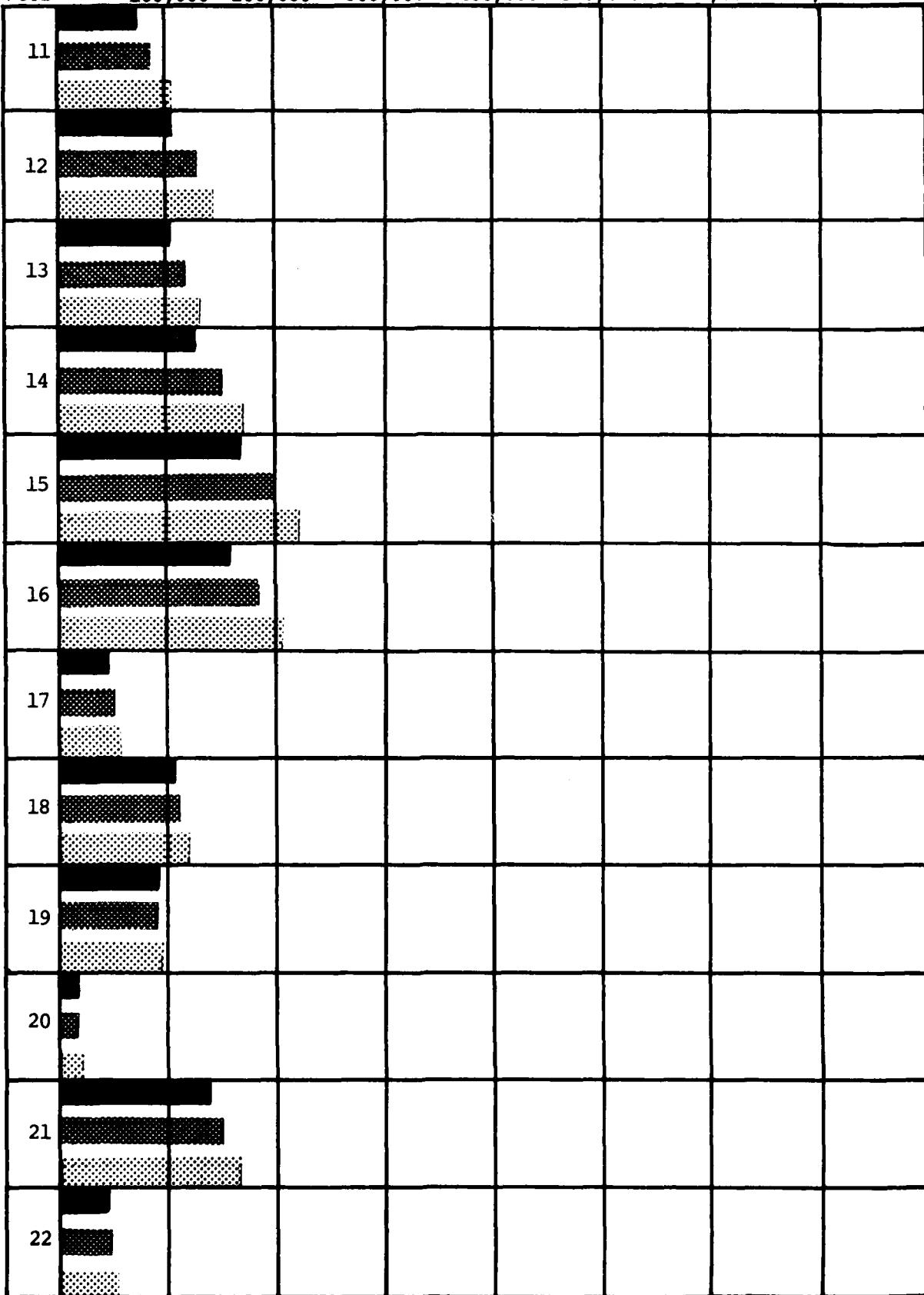
Fig.

RECREATIONAL USE ANALYSIS - POOL 22 *



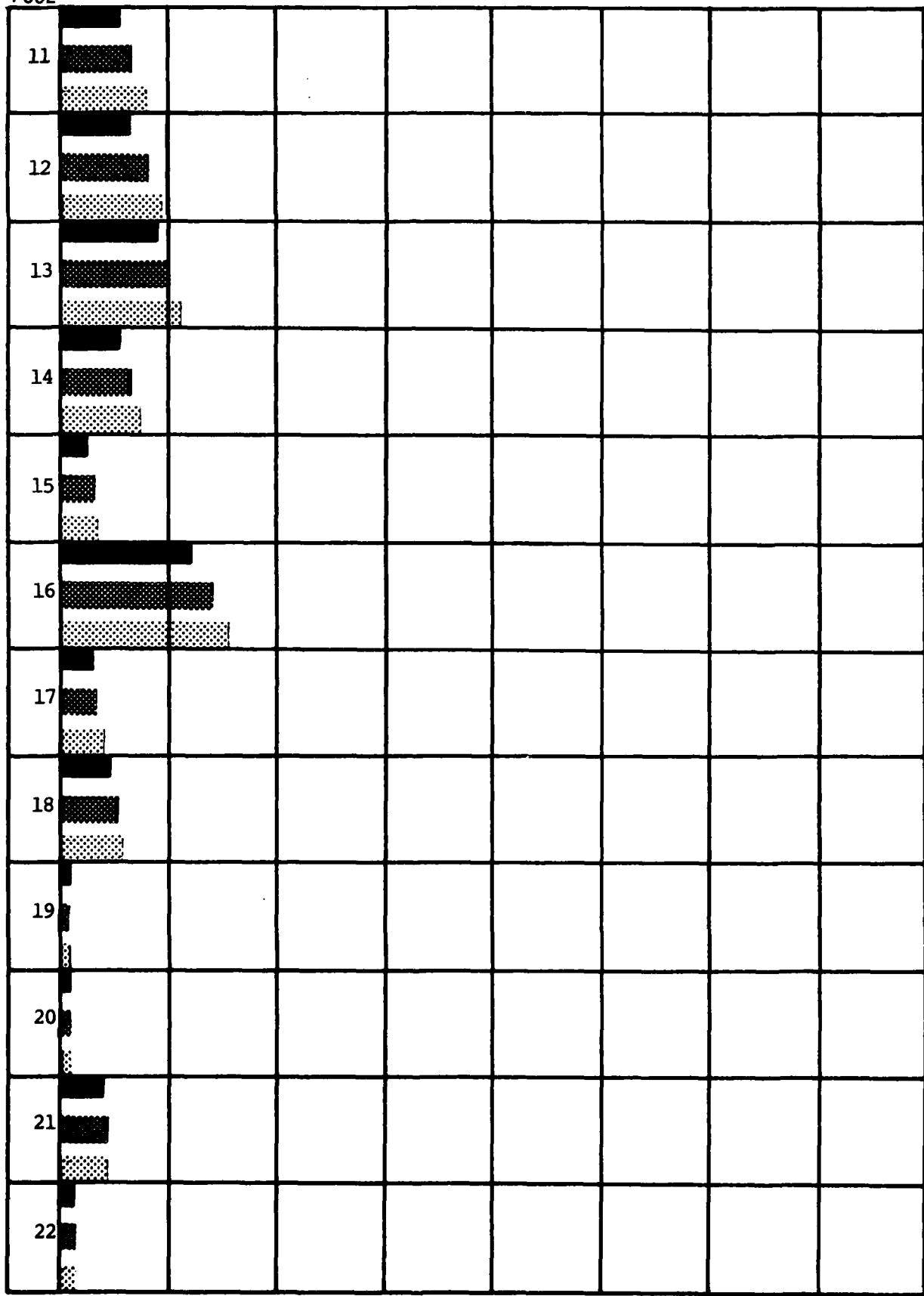
ACTIVITY USE BREAKDOWN - PICNICKING*

POOL 100,000 200,000 300,000 400,000 500,000 600,000 700,000

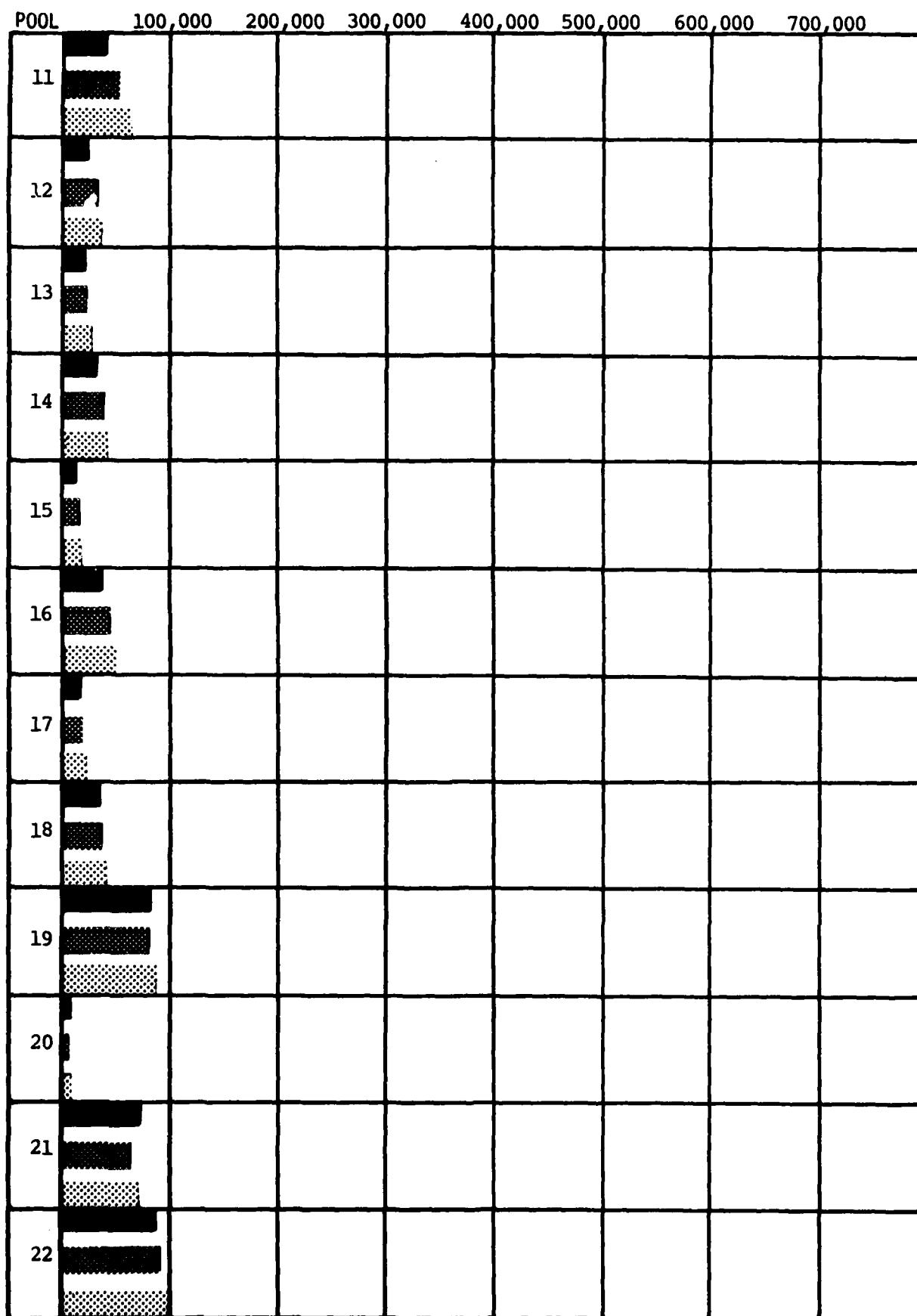


ACTIVITY USE BREAKDOWN - CAMPING*

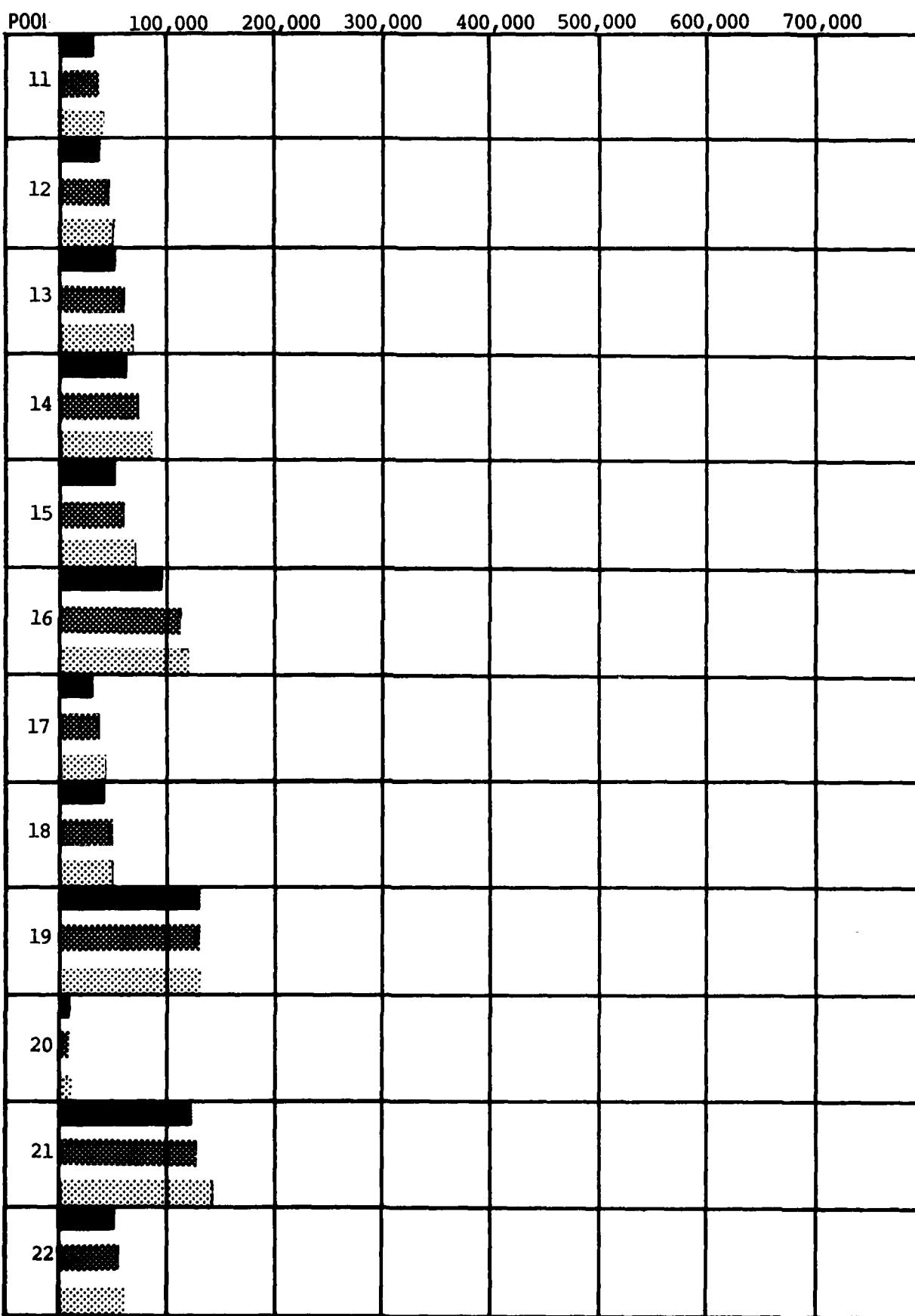
POOL 100,000 200,000 300,000 400,000 500,000 600,000 700,000



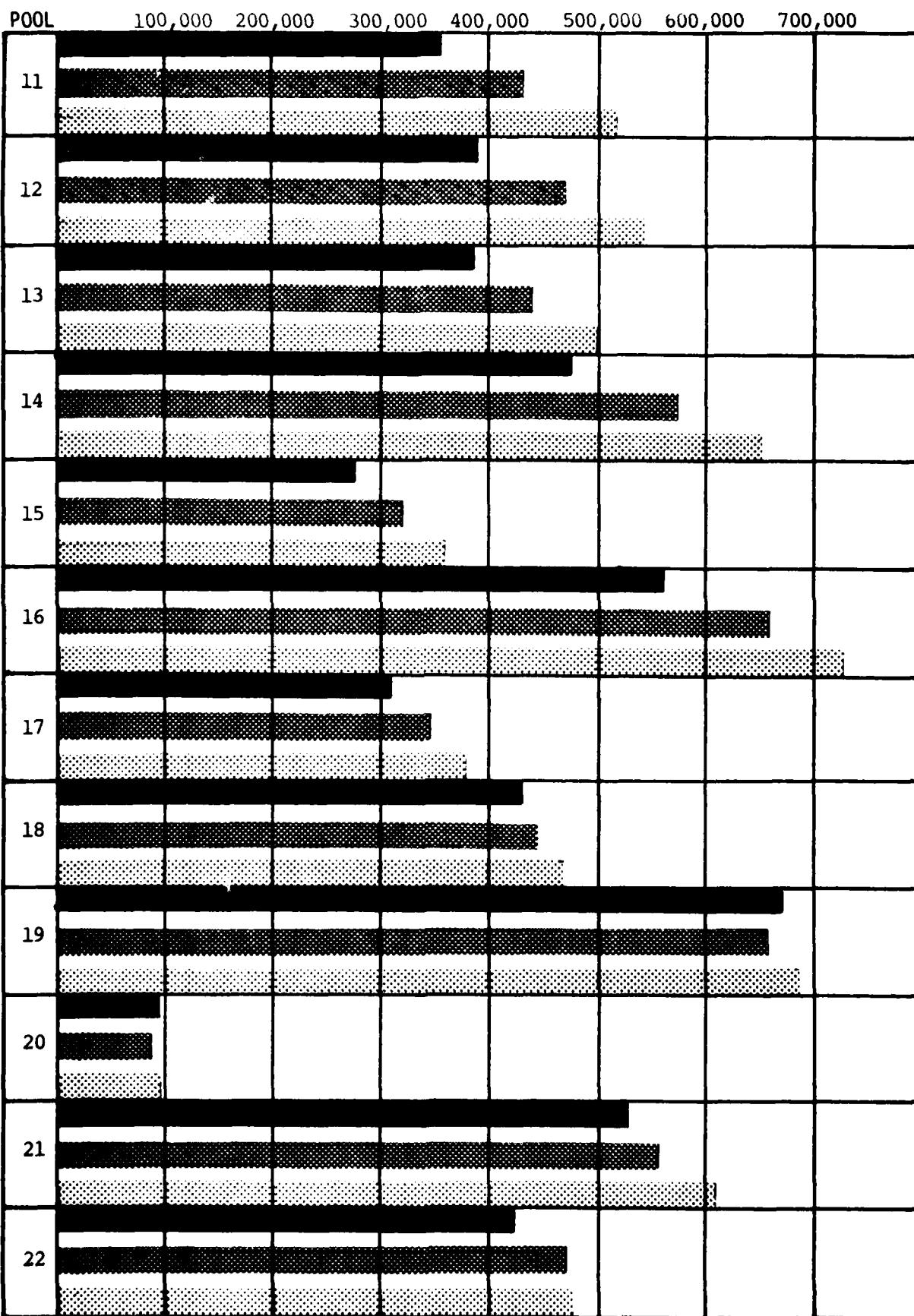
ACTIVITY USE BREAKDOWN - SWIMMING *



ACTIVITY USE BREAKDOWN - WATER SKIING*



ACTIVITY USE BREAKDOWN - FISHING*



ACTIVITY USE BREAKDOWN- BOATING *

POOL 100,000 200,000 300,000 400,000 500,000 600,000 700,000

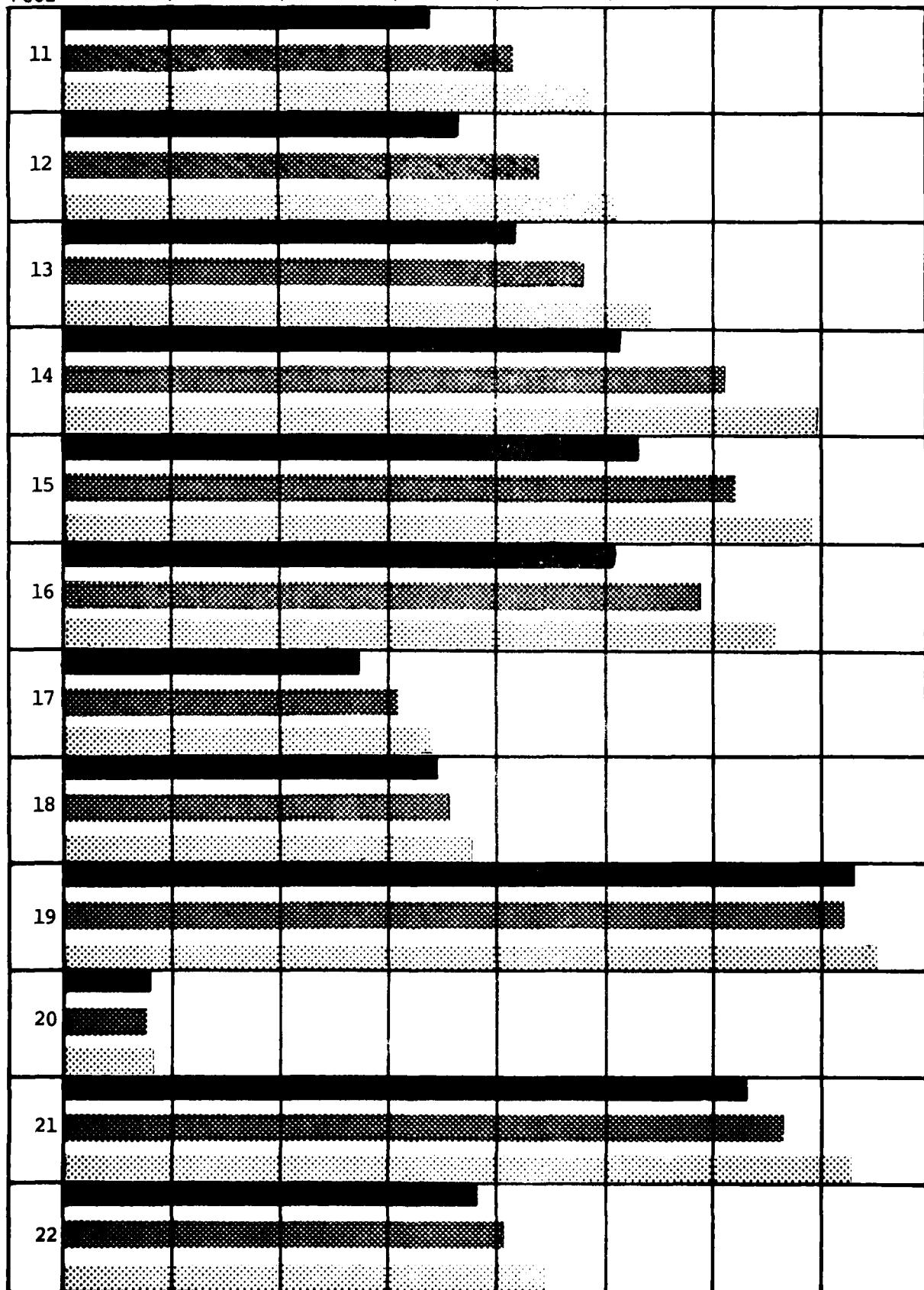
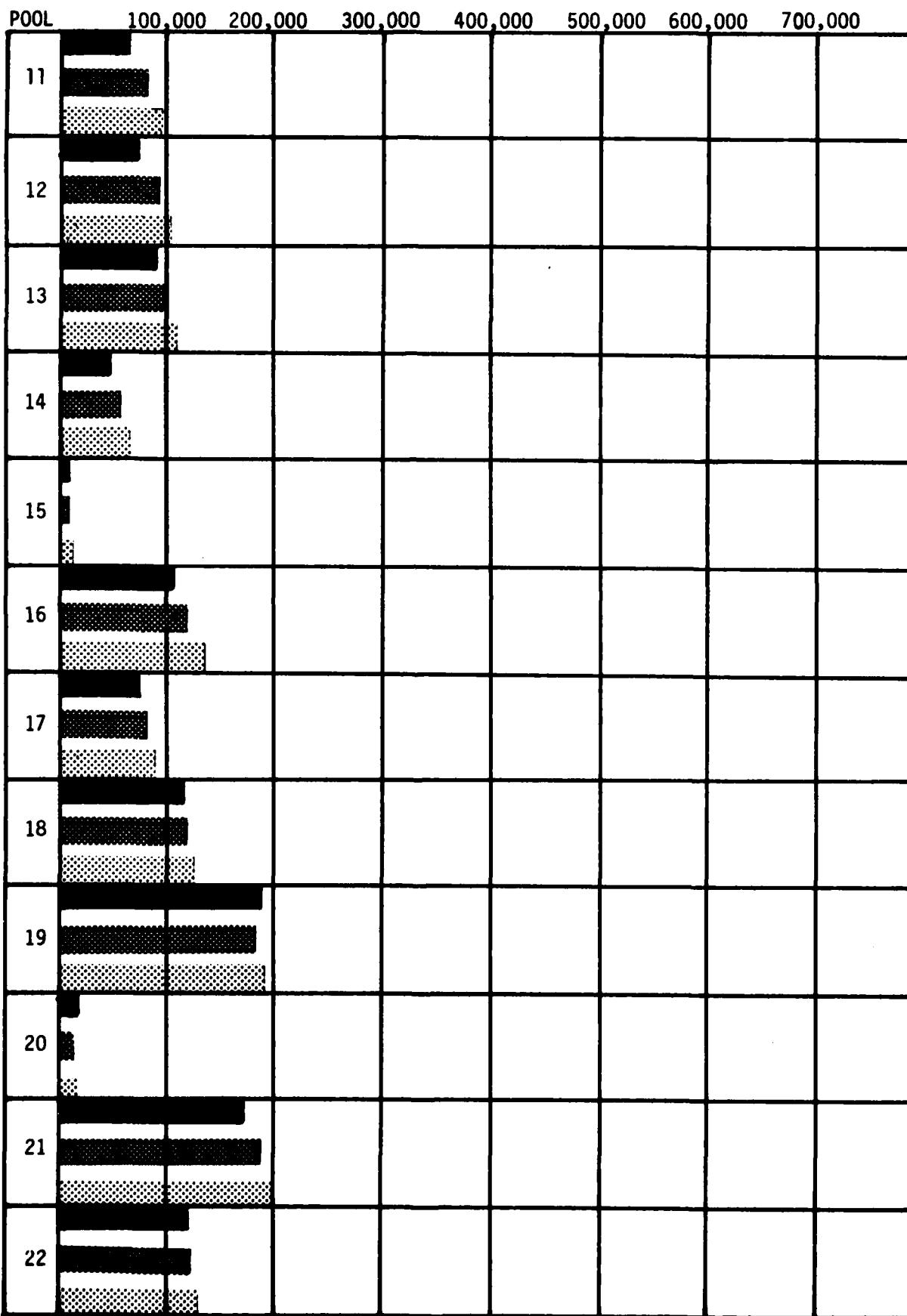


Fig.19

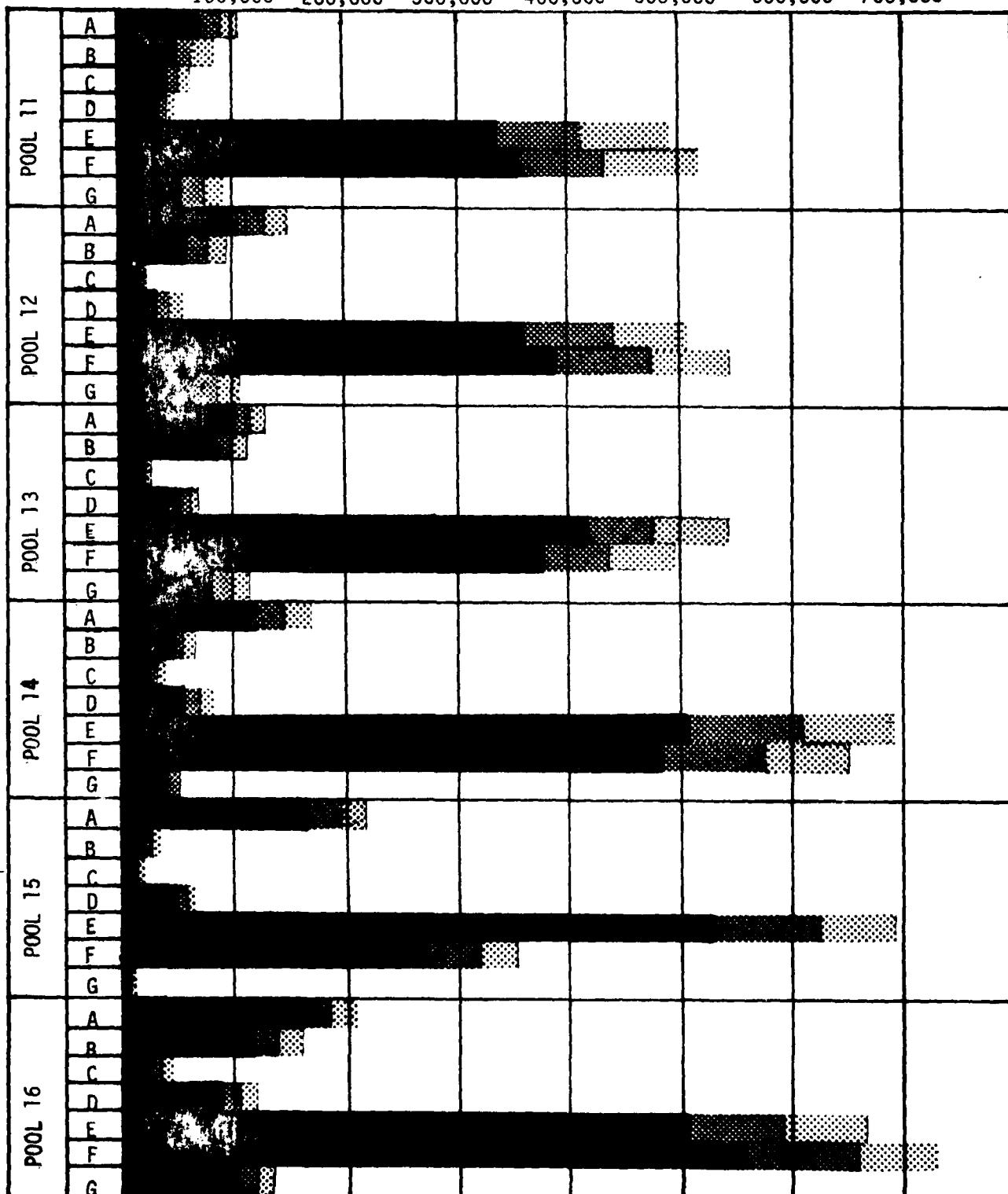
ACTIVITY USE BREAKDOWN - HUNTING *



RECREATION USE SUMMARY - POOLS 11-16**

Page 75

100,000 200,000 300,000 400,000 500,000 600,000 700,000



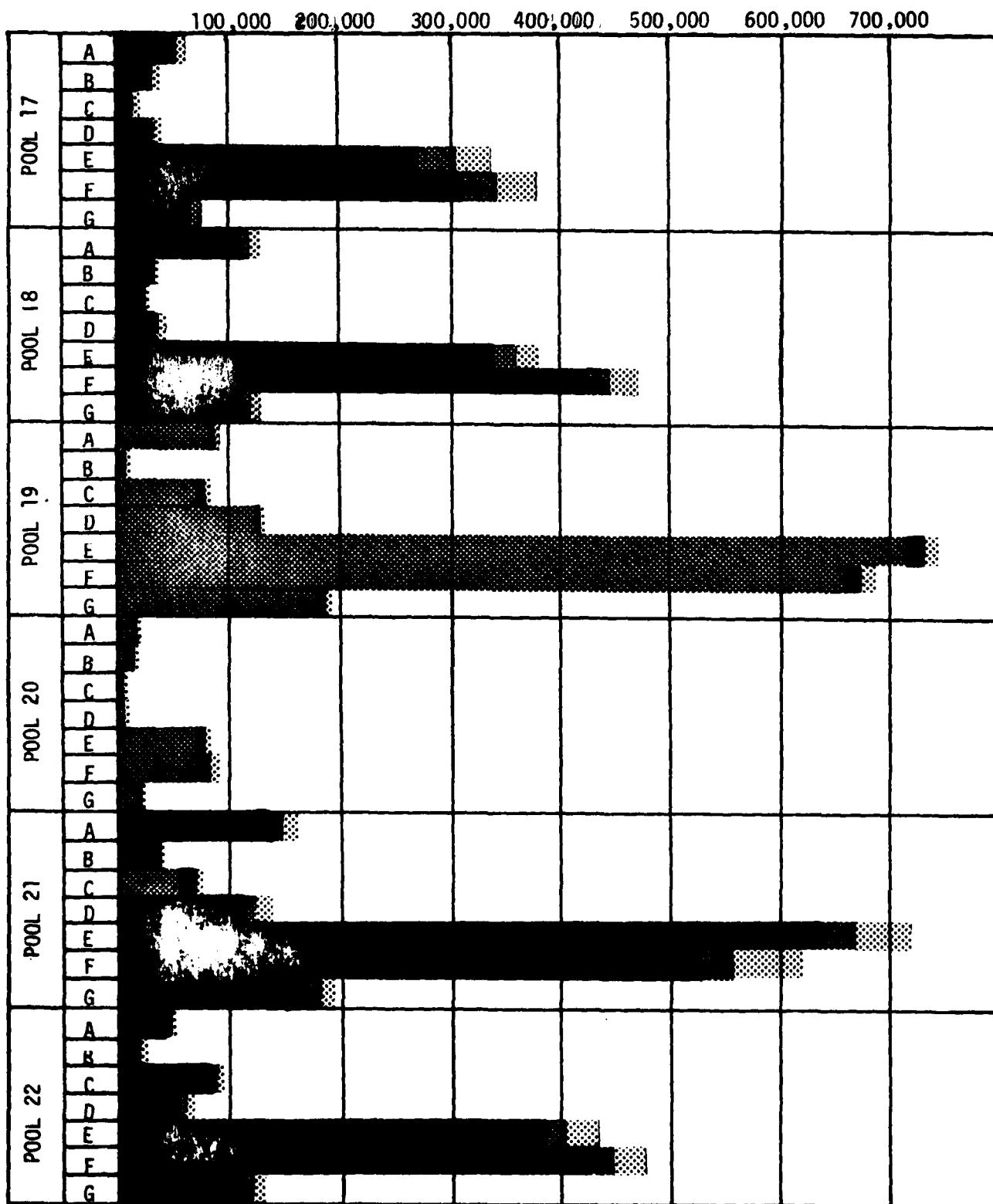
BASE YEAR

2000

2025

- A PICNICKING
- B CAMPING
- C SWIMMING
- D WATER SKIING
- E BOATING
- F FISHING
- G HUNTING

RECREATION USE SUMMARY - POOLS 17-22^x Page 76



TOTAL PROJECTED RECREATION ACTIVITY DAYS SUMMARY - POOLS 11-22*

